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NEXT ANNUAL SESSION, MINNEAPOLIS, MINN., 1928

Bulletin

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ECONOMICS OF PUBLIC HEALTH*

JOHN A. FERRELL, M.D., DR.P.H.

Director for the United States, International Health Board of the Rockefeller Foundation

NEW YORK

The economics of public health, as I understand the subject, relates to the policy the government has pursued or should follow with reference to the conservation of human health. All important nations are committed to the policy of developing and conserving their natural resources. The citizens who compose the nation represent the most important item in the list of national assets. The protection of their lives and health is regarded as essential to the national welfare. Likewise states, counties and municipalities recognize that the safeguarding of the life and health of the people is a government responsibility. The principle has received universal adoption, but the programs for applying it vary widely as to scope, cost and results.

If the government, in the discharge of its responsibility to society, is to deal intelligently with the problem of human health, it must ascertain the present situation with reference to the amount of sickness—particularly that of a preventable character—its cost, both private and public, what has been done to meet the problem, the amount expended, the results obtained and the indications as to future procedures. Man is a complex organism, and for the economist he is the outstanding variable. Hence the measurement of his health, unlike procedures in mathematics, physics or chemistry, cannot be carried out with a high degree of precision. However, methods for approaching the task have been devised that will give a general idea of the true situation.

COST OF SICKNESS

The cost of sickness in the United States has been variously estimated. Expenditures for the services of physicians and nurses and for hospitals and medicines were estimated for 1921 by Mr. Moore of the Public Health Service as $1,400,000,000, or a per capita of $12.33, and by Dr. Charles H. Herty, of the Chemical Manufacturers Association, for 1925 as $1,015,000,000. Dr. Dublin of the Metropolitan Life Insurance Company has presented similar estimates and reports that 2 per cent of his company's policyholders, and probably a larger percentage of the entire population of the nation, are constantly sick and there is an average loss of wages for each person of seven days in the year. Mr. Homer Folks of New York accepts these estimates and concludes that there is an average per capita expenditure for medical care of $10 a year and a loss of wages because of sickness of $12 per capita a year, or a total of $22.

A study of mortality statistics by Dr. Dublin showed that approximately 33 per cent of deaths are due to causes now generally recognized as preventable. Statisticians have computed the economic loss due to sickness and death sustained by the nation unnecessarily. They estimate the cost of raising an infant to the adult stage when he will become a producer. They then compute his value based on the capital investment that would be represented by his future earnings. The amount of the losses shown by their estimates is stupendous and in comparison the amounts expended by the government specifically for preventing unnecessary sickness and deaths seem insignificant. Time will not permit a full discussion of this aspect of my subject. The amounts involved are probably beyond the comprehension of the average citizen, and no one who is reasonably well informed will question that the loss is extremely large and that the measures for preventing this loss have been wofully inadequate.

EXPENDITURE FOR PROTECTION OF HEALTH

It is probably impracticable to ascertain, with any degree of accuracy, the amount of money now expended in the country for the protection of health. A large sum, of course, is spent privately by individual families for food, clothing, housing and sanitation. To an increasing degree these families arrange with physicians and dentists for advice and treatment before much damage occurs. Industrial corporations are making provision to protect their employees against sickness, exposure and fatigue and are striving to improve environmental sanitation. I have not found estimates as to the amount of the expenditures of this character which directly or indirectly influence health. It is known that they are quite large and are increasing.

Many public expenditures, not specifically for public health, exert a most important influence on health. Public schools, for example, teach the elementary principles of personal hygiene and disease prevention. They attempt to train the students in correct habits of living and teach them how to become productive. It is recognized that a person's capacity to earn should be developed, for the larger his income, the higher will be his standard of living. In turn this should mean better health, and better health should make for greater wealth. Ability to purchase health protection, either from the individual or the community standpoint, is a basic factor in any plan for conserving public health.

Notwithstanding these large expenditures which influence health but are not recorded in health budgets, I shall limit the present discussion primarily to the expenditures by the government specifically for public health. According to official records, the federal government expended in 1923 for public health, through a

* Read before the Conference on Public Health, Chicago, March 25, 1927.

number of departments, approximately $5,000,000 (table 2), or a per capita of 4.5 cents. According to Mr. Harry H. Moore, whose book shows the use made of the taxpayer's dollar for 1923 and 1924, 6 cents went for certain civil functions, and "of this amount 0.4 of one cent was applied to the promotion of health by all federal departments."

The forty-eight state health departments expended for 1925 approximately $10,145,826, or 9 cents per capita. However, their expenditures for institutions, particularly those for the care of tuberculosis, are not included in these figures because there is a lack of uniformity in the various states in handling this phase of the work. In certain instances, tuberculosis expenditures are under the state health department; in others, they are under special boards. Figure 2 shows, by states, the population, the expenditures by the state health department (exclusive of those for tuberculosis institutions), the per capita state appropriation for the health department, and the per capita income for the state. It will be noted that Delaware, for 1925, heads the list in the per capita expenditures for health. This state spent 32.9 cents

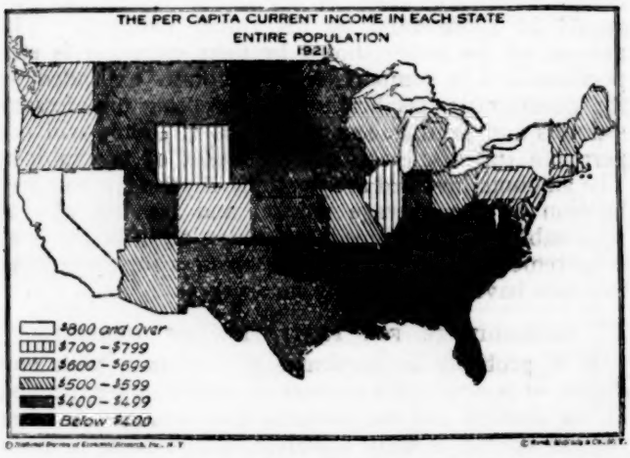

Fig. 1.—Per capita current income in each state, for the entire population in 1921.

and had an average per capita yearly income of $797. Nebraska is at the foot of the list with a per capita expenditure for its health department of only 2.5 cents for 1925. Its per capita income was $491. California and New York show the highest per capita incomes of $1,255 and $1,250, respectively, but in per capita expenditures through their health departments New York takes twelfth place, expending 11.6 cents per capita, and California thirty-first place with an expenditure of 6 cents. These states, as well as several others, such as Ohio, Massachusetts and Illinois, have a number of very large cities which, in addition to contributing toward the state expenditure for health, finance their own health services.

Thus, though the state appropriation for health work is contributed by the whole population, its benefits are restricted to a smaller population. Therefore the beneficiaries of the work, although their per capita income is comparatively high, are actually paying much less per capita for health work than the people of many less populous and less wealthy states. In Mississippi and North Carolina there are no large cities, so that the per capita expenditures shown in the table represent, in the main, funds derived from the people served. However, as the negro population is relatively large and the negroes pay a very small percentage of the taxes collected, they benefit out of proportion to the amounts they pay. Even so, the per capita income of both states is relatively low, that for Mississippi being only $252 and that for North Carolina $336, and yet, with a per capita expenditure for the state health department of 16.7 and 15.7 cents, respectively, they take fourth and fifth places in the list of states.

In 1924, 248 cities, having a population of 40,000 or more, or an aggregate population of 39,981,105 inhabitants, spent approximately $34,206,343, or a per capita of 86 per cent. A recent survey [1] of the health department of the hundred largest cities in the United States for the year 1923 contains an analysis of expenditures prepared by Dr. Allen W. Freeman. The average per capita expenditure for health by these cities he gives as 88 cents, which aggregates $28,413,998, but he points out that the budgets are not uniform as to items, as some of them include mosquito control, rodent control, support of hospitals, garbage disposal, plumbing inspection and poor relief. He enumerates twelve items considered essential that are more or less common to all the cities, and for each he gives the actual average cost in cents in one column, and in another the most usual amount expended (table 1). For fifty-three of the 100 cities the per capita expenditures ranged from 50 to 75 cents, and for the entire list the lowest per capita expenditure was 21 cents and the highest, that for Jersey City, was $1.122.

TABLE 1.—*Per Capita Cost for Health Services of One Hundred Largest Cities of United States for 1923* *

Twelve Essential Items	Average Actual Cost, Cents	Most Usual Cost, Cents
Administration	6.0	4.5
Vital statistics	1.5	1.5
Communicable diseases	8.2	4.5
Tuberculosis	4.0	3.5
Venereal diseases	1.5	1.5
Infant hygiene	5.3	2.5
School hygiene	13.1	13.5
Nursing	1.4	...
Laboratory	4.0	3.5
Milk inspection	3.2	2.0
Food inspection	4.3	1.5
Sanitary inspection	6.6	7.5
	59.0	46.0

* Freeman in Bull. 164, U. S. P. H. S.

TABLE 2.—*Growth in Public Health Expenditures*

Federal Government*				Cities of U. S. Having 100,000 Population and Over‡	
U. S. P. H. S.†		States		Per Capita Health Expenditure in Cents	
1910	$1,371,758	1914	$4,500,000	1919	63.64
1905	1,631,719	1918	6,500,000	1920	74.18
1910	2,020,777	1922	11,500,000	1921	81.85
1915	2 799,137	1925	12,000,000	1922	80.84
1920	5,985,705			1923	82.10
1924 (budget)	8,737,342				

* Moore, H. H.: Public Health in the United States.

† These items include expenditures only for the U. S. Public Health Service, but they include expenditures for hospitals, immigration inspection, and the like, which are not regarded strictly as a part of a public health program. It has been estimated that about $5,000,000 yearly is now spent by departments of the federal government for activities that are strictly in the public health field.

‡ Bull. 164, U. S. P. H. S.

At the close of 1926 there were 341 full-time county health organizations in thirty-four states. In six of the states, Alabama, California, New Mexico, North Carolina, Ohio and Tennessee, that are widely distributed, there are 439 counties (table 4). "The National Market" of the Crowell Publishing Company lists 40 per cent of these counties as "best,"

1. Bull. 164.

25 per cent as "good," 21 per cent as "fair," and 14 per cent as "poor." Fifty-three per cent of the "best" counties and 29 per cent of the "good" counties have full-time health units which spend, on an average, 30 cents per capita. Only 15 per cent of the "fair" counties and 10 per cent of the "poor" ones are organized, but the average per capita expenditures for them were 33 cents and 59 cents, respectively. Expressed in other words, there are 145 counties in these six states which have full-time health organizations, of which 125 are in the "best" and "good" counties, and only twenty in the "fair" and "poor" counties. The counties designated as "best" have a gross income of $12,000,000 or over, which represents approximately a per capita income of $700 or over. The "good" counties have from $5,000,000 to $12,000,000 income, or, roughly, $400 per capita. The "fair" counties have from $2,000,000 to $5,000,000. income, or approximately $250 per capita income. The "poor" counties have a gross income of $2,000,000 or less, which usually represents a per capita income of $200 a year or less. Unfortunately, the large map of the Crowell Publishing Company, showing the counties and the economic status of each, will not be adaptable for publication with this paper. However, the National Bureau of Economic Research issued a map for 1921 which shows the per capita current income for each state. It is smaller, but has suggestive value as to the relative economic situation in the various states (fig. 1).

State	1925 Population	FOR STATE HEALTH DEPTS. 1925 Total appropriation from State Legis.(1)	1925 Per cap. State Approp.	1928 Per cap. Income (2)	Scale for per cap. State Approp. 0 .05 .10 .15 .20 Scale for per cap. income
Del.	233,653	77,000.	.329	$ 797.	
Florida	1,079,630	219,560.	.203	497.	
Md.	1,529,181	305,938.	.200	617.	
Miss.	1,790,618	299,800.	.167	282.	
N.C.	2,740,883	429,822.	.157	536.	
Mass.	4,102,616	636,487.	.154	1067.	
Penna.	9,283,317	1,371,703.	.148	834.	
Maine	781,214	115,000.	.147	704.	
La.	1,971,589	270,883.	.144	436.	
Conn.	1,517,581	213,550.	.140	917.	
N.J.	639,400	88,000.	.138	1066.	
N.Y.	11,040,137	1,286,530.	.116	1250.	
Vermont	352,428	40,000.	.113	651.	
Michigan	4,110,422	418,971.	.101	715.	
Ohio	5,270,434	573,715.	.091	708.	
New Jersey	3,474,570	297,189.	.085	946.	
S.C.	1,770,424	150,089.	.084	211.	
Alabama	2,456,384	206,000.	.083	300.	
Okla.	2,219,423	183,671.	.082	420.	
N.M.	377,380	31,238.	.082	452.	
Illinois	6,921,338	569,443.	.082	889.	
N.H.	449,533	36,638.	.081	769.	
S.D.	683,877	54,060.	.081	279.	
Wisconsin	2,785,657	226,852.	.081	625.	
Arizona	401,022	27,406.	.068	685.	
Va.	2,436,897	164,265.	.067	414.	
Idaho	486,996	32,323.	.066	549.	
Montana	697,809	42,700.	.066	825.	
Minnesota	2,547,515	157,500.	.061	586.	
Utah	488,586	29,750.	.060	577.	
Cal.	3,987,271	241,575.	.060	1258.	
W. Va.	1,586,641	93,929.	.059	531.	
Indiana	3,048,590	176,750.	.057	816.	
Nevada	77,407	4,250.	.054	861.	
Tenn.	2,416,735	129,212.	.053	381.	
Oregon	940,389	43,547.	.051	768.	
Colo.	1,012,089	51,190.	.050	772.	
Wyoming	219,382	10,600.	.048	876.	
Ky.	2,481,890	121,299.	.048	401.	
Ark.	1,843,744	85,000.	.046	276.	
Kansas	1,808,577	74,515.	.041	811.	
Missouri	3,461,085	129,797.	.037	850.	
Georgia	2,943,498	96,431.	.031	279.	
Texas	5,088,088	159,468.	.031	518.	
Iowa	2,496,881	75,310.	.030	639.	
Wash.	1,667,161	45,000.	.030	882.	
N.D.	682,832	20,076.	.029	388.	
Nebraska	1,350,022	34,000.	.025	491.	
TOTAL	112,304,300	10,166,826.	average .090		

Fig. 2.—State health appropriations in relation to income; per capita basis: solid black, per capita state appropriation (in cents) for health work; shaded area, per capita income (in dollars). 1, amounts exclude appropriations for tuberculosis institutions and the like, but include special revenues and fees allocated to state health department. 2, data from "The National Market," courtesy of the Crowell Publishing Company, New York.

The nation's investment in public health service in relation to its expenditures for other purposes would seem to be exceedingly small. The average amount spent for medicine per person annually has been estimated as $5, of which $3 was for proprietary medicine. The estimated yearly expenditure for cosmetics was $1.25, for tobacco $21, for chewing gum $0.50, and so on. Of course, there is a vast difference between the marketing of such articles for a given amount of money and securing a like sum for public expenditure. However, Mr. H. H. Moore,[2] in connection with an analysis of the expenditures of the funds of 187 cities in 1921, shows that there was spent, per capita, annually, for public education, $10.62; for police and other protection, $3.66; for highways, $3; for fire departments, $2.57; for charities, hospitals and correction, $2.08; for recreational facilities, $0.99, and for the conservation of health, $0.71. The growth in twenty-five years in the expenditures for education has been noteworthy. The claims on the public treasury for health conservation are certainly as basic as those for education. There is no desire, however, to discount the importance of schools. I merely wish to indicate that gradually health service likewise may come to be publicly appreciated to a much greater degree than is the case at present.

A study of the variation in the per capita amounts spent by various states, counties and cities for public health service is interesting. No inflexible rule seems to hold, but, in general, it is found that there is a high degree of correlation between the amount expended and the extent of the recognized health hazard of the community. Communities subjected to immediate danger from bubonic plague, yellow fever, typhoid or malaria will support public health work in the same spirit with which they will support war. When they find their very existence is threatened, they will pay any amount within their grasp to secure protection. Two Southern towns in 1921, each having about 2,000 inhabitants, were suffering terribly from malaria. Experts were obtained to survey the situations. They found that major drainage projects were necessary, and that the cost would be quite high, approximately $16 per capita in one case and $20 in the other. The people had to have protection or abandon their towns. Though the counties in which the towns are located have an annual per capita income of only $168 and $326, respectively, the towns found the means to buy protection from malaria. The results in both cases were gratifying, and subsequently the maintenance cost has been moderate.

Again, certain communities, states or cities have an average or low death rate; that is, they have no more sickness than is regarded as normal. They are proud of their schools, roads and public buildings, but they are already burdened with taxes. In the absence of recognized danger, it is very difficult to induce them to provide for more than a meager health service.

Between these two extremes of attitude most communities are situated. Where economic conditions are good, the standard of intelligence and the per capita

2. Moore, H. H.: Public Health in the United States.

income high, the amount of public funds relatively large, and the customary basis is followed in allocating funds to the usual items, a comparatively high per capita expenditure for health is made. In the poor communities the converse holds true. Quite a number of communities are making relatively large appropriations for health purposes which have neither alarming health hazards nor exceptionally favorable economic conditions (fig. 2). The causes for such generous support will vary, but generally it will be found that the community is well educated in public health matters and this in turn generally means that it has enjoyed capable public health leadership.

INCREASING SPAN OF LIFE

Achievements in the prevention of sickness and death have been remarkable. In 1880 the general death rate for the United States Registration area per thousand of population was 20 and in 1922 it was 11.8. Stated in other words, the average span of life in 1900 was 49.2 years and in 1920 it was 55.1 years, an increase of approximately six years. In New York City for the same period, the span increased from 40 years to 55 years. According to Dr. Dublin, the life expectancy of a new-born baby was 49.24 for the United States registration area in 1901 and 57.32 in 1926, a gain of 16 per cent, and the expectancy for New York City for a fifty-year period has increased approximately 60 per cent. He concludes that it is within the range of possibility to lengthen the average span of life from the present 57 or 58 years to 65 years. The tuberculosis death rate of the country has been cut from 180.5 in 1900 to 80.2 in 1924, a reduction well in excess of 50 per cent in twenty-five years. Examples of this character (table 3) could be multiplied.

TABLE 3.—*Reduction in Death Rates*

Year	Death Rates per 100,000 Population in U. S. Registration Area			Infant Mortality, No. of Deaths Under 1 Year per 1,000 Live Births
	Tuberculosis of Respiratory System	Typhoid	Diphtheria	
1900	173.3	31.3	40.4	....
1911	138.2	21.0	18.9	....
1912	130.0	16.5	18.2	....
1913	127.9	17.9	18.9	....
1914	128.2	15.5	17.9	....
1915	128.2	12.4	15.7	99.9
1916	124.3	13.3	14.5	101.0
1917	129.4	13.5	16.6	93.8
1918	133.2	12.6	13.9	101.0
1919	111.3	9.2	14.7	86.6
1920	100.8	7.8	15.3	85.8
1921	87.6	9.0	17.7	75.6
1922	86.3	7.5	14.6	76.2
1923	83.5	6.8	12.1	77.1
1924	80.2	6.7	9.4	70.8

Although it is not possible to evaluate accurately the influences that have produced such results, it is reasonably certain that among contributing factors have been a broader and more accurate knowledge of diseases and of methods for their prevention and cure, a better educated public, better trained physicians, dentists and nurses, more adequately equipped hospitals, larger average earning capacity, higher and more hygienic standards of living, better diet and housing conditions and, emphatically, the work of health agencies, official and voluntary. Although the extent of the contribution to the improved conditions made specifically by the health agencies cannot precisely be determined, it is known that some of the most conspicuous and clear-cut achievements in the public health field were due mainly to the leadership and activities of public health authorities. This certainly would hold true in the practical disappearance of yellow fever, cholera and plague and to a slightly less degree, perhaps, to the extensive control of smallpox, diphtheria, typhoid, malaria and hookworm disease. The definiteness and rapidity with which these diseases have yielded is a tribute to public health leadership and an indication that this leadership should be supported in the numerous public health measures that are recognized as rational, even though the basis for measuring tangible results is not clear-cut.

AN ADEQUATE HEALTH PROGRAM

Methods for the evaluation of expenditures for activities in the public health field, particularly those not promptly reflected by mortality statistics, have been discussed extensively in recent years. A standard of measurement has not yet been devised comparable, from the standpoint of accuracy, with those employed in business enterprises for determining which procedures are fruitful and which wasteful. In a farming project it is possible to ascertain by tests the kind of seed, the amount of cultivation, the kind and amount of fertilizer that, for a given tract of land, will produce the largest yield. In a department store, the management can ascertain accurately the profit or loss from the shoe, clothing or hat division. In a health department it would be desirable similarly to evaluate the expenditures of each division. Unfortunately, the measurement of health is no easy task. Well known authorities are convinced that certain specific activities or services will protect and conserve health, and they have strong evidence in support of their views. The public at large definitely desires and values these services. It is practicable to obtain a financial equivalent for such services. That is to say, activities can be translated into dollars or dollars into service. This approach to the problem of evaluation in the health field is now being employed experimentally in city and county health work, but, since the dollar or the item of service cannot, with precision, be translated in all instances into terms of health conservation, certain questions arise, particularly with reference to the character and scope of the program, which lead to differences of opinion.

When, therefore, a discussion occurs as to what would constitute an adequate public health program, widely ranging views are presented. Practically every one will agree with the theory that a sound health program should apply fully our present knowledge as to the prevention of sickness and death as far as practicable under present economic conditions. Of course, there is a group of diseases about which too little is known to permit the organization of any rational procedures except for research. There is a second group of diseases concerning which basic knowledge is limited. They should be studied with a view to obtaining more knowledge in order that improved measures of control may be devised. There is a third group of diseases for the control of which all essential knowledge is available. Little difference of opinion really exists, however, as to the correct procedure in applying present knowledge.

The main question about which controversy centers is: What part of the program of hygiene and preventive medicine should the physicians, dentists and nurses conduct with their compensation derived directly from the individuals or families immediately concerned, and what part should be carried out by suitably trained personnel employed by the community at public expense? In other words, the bone of contention is the distribution of the work in the field of preventive medicine. The broad-minded, sincere advocate of the

cause of health is concerned primarily in getting the work done. He would like to see as much as possible of the task provided for privately between the individual and the practitioner, and the remainder assumed by the community. Of course, it has been argued that the physicians have not, cannot, or will not meet the situation, and unless the community broadens the scope of its health program, great and needless waste of human life will result. Effort should be made to determine the true situation and if the present order with reference to the practice of preventive medicine on a private basis is unsatisfactory, it should be ascertained what assurance can be given that changes will be made so that the community responsibility for controlling disease and conserving health may not be expanded beyond the degree necessary.

DISTRIBUTION OF COST

The economic status of the people in any community has a direct bearing on the whole problem because there is a limit beyond which it is impracticable for the individual to pay or for his community to pay. Where there is a high average of sickness and physical disability, there is likely to be a low average of income. This in turn makes for low standards of living, low productivity, inability of the individual to pay for medical service, or to pay taxes with which to provide service at public expense. Thus in states, cities and counties having a high per capita income (fig. 1) the individual does not need so urgently health facilities financed by the community, and yet it is in such communities that it is practicable, without excessive taxation, to supply such facilities. The same situation applies also to educational, social and recreational facilities. In poor communities the converse situation holds true to a depressing and perplexing degree.

We are confronted, then, with the question not only as to the per capita amount of public funds that should be spent for the conservation of health but also how the cost should be distributed between municipality, county, state and nation. It is perfectly obvious that if one group of communities has a per capita annual income under $200 a year and another group $1,000 or more, there will be a tendency for individual and physician to move from the poor communities to the prosperous ones. If this should proceed far enough, it would result, on the one hand, in the virtual abandonment of extensive rural areas where there now are producers of raw materials and consumers of manufactured products. On the other hand, there would occur ultimately excessive congestion of population in the communities that are now prosperous. Shall rural America be sacrificed to industrial America? From a far-sighted standpoint, is it in the interest of the welfare of the nation, or even of the industrial communities, to permit this to go on until the country may be weakened by the consequences? Should state and nation take steps to correct the trend and equalize facilities and opportunities, particularly with respect to health, before political strength is concentrated in the populous centers of industry? The nation has granted some aid on a population basis in matters of health and roads. There is controversy as to whether or not the policy is sound. Assuming that it may be, it does not follow that the problems we are considering in economics will be equitably solved by appropriations distributed on a population basis. The poor communities which are in greatest need of aid are usually large in area and sparsely settled. A few of the states in the field of education have adopted the policy that the child belongs to the state and it is the state's responsibility to see that every child, regardless of location, enjoys a chance to obtain an education, at least up to a minimum standard. Let us assume that a minimum standard of health service should be adopted with the idea that no community, however remote or sparsely settled, should have less than the standard. It would be found that if the individuals of poor communities should attempt to support their health work by taxation in accordance with their ability, based either on a fixed percentage of their income or on a fixed per capita basis (which would, of course, involve greater personal sacrifice), the aggregate amount raised would nevertheless be relatively small. It would still be necessary to have a large subvention from the central government—derived, of course, from wealthier communities. Whatever the items of the health program may be, it will be found that the cost per item, for example, a visit to a home by a public health nurse in rural and sparsely settled areas, will amount to from

TABLE 4.—*One Hundred and Forty-Five Full-Time County Health Organizations of Six States Representing Six Sections of the Country* *

State	No. of Counties	Best Counties † Total No.	Best Counties † Full Time Counties No.	Best Counties † Full Time Counties Total Budget	Best Counties † Full Time Counties Average per Capita	Good Counties ‡ Total No.	Good Counties ‡ Full Time No.	Good Counties ‡ Full Time Total Budget	Good Counties ‡ Full Time Average per Capita	Fair Counties § Total No.	Fair Counties § Full Time No.	Fair Counties § Full Time Total Budget	Fair Counties § Full Time Average per Capita	Poor Counties # Total No.	Poor Counties # Full Time No.	Poor Counties # Full Time Total Budget	Poor Counties # Full Time Average per Capita
Alabama	67	11	11	$535,537	$0.612	18	12	$122,810	$0.289	32	7	$56,640	$0.323	6	..	.....	.....
California	58	35	9	949,313	0.704	10	..	.....	.....	7	..	.....	.....	6	..	.....	.....
New Mexico	31	1	1	12,000	0.408	4	1	7,200	0.479	2	1	8,975	0.542	24	5	$37,945	$0.602
North Carolina	100	30	21	316,471	0.321	33	11	68,323	0.296	23	4	24,464	0.286	11	1	8,350	0.561
Ohio	88	85	45	566,164	0.131	3	..	.....	.....	..	..	.....	.....	..	..	.....	.....
Tennessee	95	14	6	69,075	0.116	29	8	102,550	0.459	28	2	13,760	0.382	14	..	.....	.....
Total	439	176	93	2,448,560	0.301	110	32	300,880	0.302	92	14	103,839	0.332	61	6	46,295	0.594
Average county budget		....	....	26,328				9,402				7,417				7,716	
		40%	53%			25%	29%			21%	15%			14%	10%		

* All data in this table relating to classification of counties on the basis of per capita income were obtained from "The National Market" through the courtesy of the Crowell Publishing Company, New York.

Counties	Full-Time Counties Number	Full-Time Counties Per Cent	Amount of Income in Millions of Dollars	Per Capita Income, Approximate Average
† Best	93	64.1	12 and over	$700
‡ Good	32	22.0	5 to 12	400
§ Fair	14	9.7	3 to 5	250
# Poor	6	4.2	3 or less	200
	145	100.0		

two to five times as much as a similar visit in an urban community.

In a prosperous community having abundant resources, it would seem then that the sane course would be for taxpayer, physician and health worker to come together and work out a basis that will be fair and equitable and yet insure the application of present knowledge to health promotion and disease prevention to the utmost degree possible. If physician and health worker fail to reach terms, the decision as to whom each activity shall be delegated will be made, wisely or otherwise, by the taxpayers.

For the remainder of the country the interested parties must struggle with a difficult problem in economics. The question of cost both for community and for individual presents a serious problem. With the health authorities of such sections the question is not whether $3 or $5 per person each year is too much or too little for the community to spend for health service, but rather how they can manage to obtain enough money from local, central and outside sources to pay for a service representing as little as 50 cents per person annually.

Few, if any, authorities will contend that the present health service, even in the "best" counties, has approached adequacy, but there is satisfaction in knowing that they have something in the way of service. The real concern relates to what can be done for the 1,000 to 1,500 counties classed as "fair" or "poor." Must the people move to more prosperous sections and abandon these counties, or can they be aided until they may be able to assume the cost of essential health service?

PROGRESS IN THE WORK OF OFFICIAL HEALTH AGENCIES

Notwithstanding the fact that many difficult problems in the field of public health are awaiting solution, it is gratifying to know that during recent years remarkable progress in the work of the official health agencies has occurred. The appropriation of the federal health service was increased from $2,799,000 in 1915 to approximately $8,000,000 in 1924. The combined appropriations of the state health departments were increased from $4,500,000 in 1914 to more than $12,000,000 in 1925. Those for the 100 largest cities increased in the four-year period from 1919, when the per capita appropriation for health was 63 cents, to 83 cents in 1923 (table 2). Since 1915, when there were practically no full-time county health organizations, there were developed, before the close of 1926, more than 330 full-time county health organizations. In all the health organizations, central and local, a better balanced program has been evolved. Provision has been made for all the essential branches of service. Better qualified personnel has been employed. The terms of employment as to salary and tenure of office have shown consistent improvement. Public confidence in the health organizations and their possibilities for rendering indispensable service has been established to an increasing degree. The best type of young men and young women is being attracted to this field of service. These remarkable developments in so short a time should be a source of gratification to those who have supplied the leadership, and should afford encouragement to hope for even greater achievements in the future.

61 Broadway.

RELATION OF VOLUNTARY HEALTH AGENCY TO PHYSICIANS AND HEALTH DEPARTMENTS *

LINSLY R. WILLIAMS, M.D.
NEW YORK

The term "public health" has been somewhat loosely applied to everything which has to do with keeping people well, preventing disease and caring for the sick. Although care of the sick is not considered as a health activity, activities organized for the prevention of disease grow out of the movement for the care of the sick.

The care of the sick was carried on by religious orders during the middle ages and later by private organizations, particularly in England. The colonies and the United States followed the English tradition in organizing private hospitals and later dispensaries for the care of the sick. There were relatively few efforts made by governmental authority in this country for the care of the sick until the middle of the last century. Health departments were organized primarily for the suppression of epidemics; and as the knowledge of disease became more definite, their efforts were also directed to the prevention of other diseases which were known to be noncommunicable.

Hospitals and dispensaries, having begun as institutions for administering medical relief, that is, in caring for the sick, started to expand their work at the end of the last century to the prevention of disease, primarily in the field of tuberculosis. The antituberculosis movement took on more active work at the beginning of this century and has continuously expanded, so that an association exists in every state for the prevention of tuberculosis.

Although there were several voluntary agencies interested in health work, these antituberculosis societies were the first that formulated a definite policy which has been adopted with various modifications by voluntary health agencies interested in the prevention of other diseases. The voluntary health agencies have not formulated a definite policy that is the same throughout the country, yet there are certain similarities which may be expressed as follows: In general, they conceive of their function as being one of investigation, the inauguration of a new activity, the demonstration of its usefulness, transferring the activity to the official agency or discontinuing it. In certain places where the governmental authorities have not made any provision for the care of the sick, the voluntary agencies have carried on a continued activity for the care and relief of the sick poor.

These principles immediately bring up the age-long conflict in regard to the government—whether there should be a great deal of government and the state should do everything or whether the individual should be left to help himself or whether a voluntary group should undertake to secure funds which are contributed in addition to taxation for the carrying on of a special activity.

As tuberculosis work is perhaps the best known, this will be taken as an example. A voluntary health agency organized for the purpose of assisting in the prevention of tuberculosis desires aid in the situation, and its first problem is to determine how many cases of tuberculosis

* Read before the Conference on Public Health, Chicago, March 24, 1927.

there are in the community. This is the period of investigation. This study is known as a tuberculosis survey and should be made with the knowledge and assent of the health authorities. The survey is usually made by a nurse or social worker consulting hospital and dispensary records and visiting the poor farm and the physicians practicing in the community; the individual data giving names and addresses of patients with tuberculosis is not divulged. It is usually found as a result of such surveys that there is a far larger amount of tuberculosis in the community than is suspected by the physicians or health authorities.

It is then suggested, perhaps by the voluntary health agency, that the official health authority should create a local dispensary for tuberculosis or a special class for tuberculosis in the existing outpatient department of a hospital, or that a special hospital should be created in the county for tuberculosis or a special pavilion for tuberculosis should be established in connection with the municipal hospital. Whichever of these activities is agreed on is recommended to the local board of health, community council or county board with the usual reply that funds are not available and it is not necessary, that the people won't stand for it, etc. The voluntary agency then determines perhaps to establish a dispensary in the community, and its organization is worked out with the knowledge and advice of the health officer and is maintained for several years.

During this period, it is found that a number of cases need institutional care and no place is available for them. An effort is then made to transfer the maintenance of the dispensary to the local health department and very commonly with success; and as it has been shown that hospital beds are needed, another effort is made to bring about the creation of a special tuberculosis sanatorium or pavilion at the general hospital. This work may be called the period of inaugurating an activity and a demonstration of need.

During this period, the relationships between the health department, the voluntary agency and the medical profession have pushed themselves into the foreground because the health department has insisted on certain regulations for the administration of the dispensary, a private agency, and the local medical society has demanded certain privileges in regard to work in the dispensary or exacted certain conditions in regard to the payment of the dispensary physician and his method of appointment. Let us assume for the moment that the tuberculosis dispensary has been taken over by the health department and the local tuberculosis hospital established, and the voluntary agency has made a study of the relation of tuberculosis to children and has finally concluded that it may with profit to the community direct its efforts to keeping well babies well, this being determined on the theory that if children do not become ill they are less liable to develop tuberculosis. Consequently, the voluntary association organizes a child welfare station for children under school age.

Here again, a number of new questions are brought up in regard to the management of the child health station. There are certain differences between the problems arising in regard to the maintenance of the tuberculosis dispensary and the child welfare station. Tuberculosis is a communicable disease, and any patient believing that he has the disease should have the right to go to a dispensary for an examination and diagnosis, irrespective of his financial status. There is no valid objection to this procedure, although it has been contested by county medical societies. The child health station, however, is primarily an institution for education and not for treatment. It is supposed to examine children, weigh them, and advise the mother how to keep them well.

What parents should be permitted to bring their children to such a center? It is my own belief that parents should be permitted to bring their children for examination and diagnosis, irrespective of financial status, in the same manner as in the tuberculosis dispensary; but this point of view is highly contested by many members of the medical societies on the ground that this will pauperize the family and that such parents should go direct to their physician. The appointment of the physician also creates a difficulty in both instances. The institution or organization that has created the tuberculosis dispensary or the child health station has the responsibility of maintaining the medical efficiency of its work; and as it employs the physician in charge and presumably pays him for his services, it is incumbent on the organization to have the final authority in nominating the physician. On the other hand, many jealousies arise on the part of certain members of the local medical society who criticize the physician in charge on the ground that he is not a specialist, that he is not competent, that he is using the dispensary or child welfare station for advertising, that he is building up his practice by asking patients to come to his office instead of to the dispensary, and so on. The local society may endeavor to secure either the direct appointment of the physician in charge, the rotation in office of the physicians in charge, the appointment of a full-time physician who shall not engage in practice, and the rigid examination of all patients as to their capacity to pay, or that no patients shall be admitted to the dispensary or station except on the recommendation of their physician.

There are two essential difficulties which must be met in the future:

1. The health department and the voluntary agency desire to see diagnostic facilities and adequate medical care provided for every individual in the community. Theoretically, the private practitioner has a similar desire, but feels that every one in the community should have his own private physician. The health department and the voluntary agency advertise their clinics and health stations and do everything in their power to increase their trade. The private physician, on the other hand, may do nothing but wait until the patient calls.

2. The health department and the voluntary agency desire to show in their annual reports the largest number of new applicants and total visits possible, irrespective of financial status of their clients. On the other hand, the private practitioner feels very strongly that neither the governmental authority nor the voluntary agency should give diagnostic service or medical care to those who can afford to pay a private physician, and with certain modifications this is evidently a just point of view. However, there are many people who could afford to pay a modest fee but who cannot be persuaded to go to see a private physician when they or their children seem to be perfectly well, but who might be persuaded to go to a clinic for examination and diagnosis if they knew that no fee would be exacted.

There are also differences between the point of view of the voluntary agency and that of the health department. The health officials are embarrassed at times by the activities of the voluntary agency, and there are two chief reasons:

1. The voluntary agency frequently employs a publicity agent and is able to secure more notices in the press than does the health department, and it not uncommonly gives the impression that it is doing more work than the health department. The voluntary agency has been known at times to be confused in the minds of the public with the health department. There are also times when the policy of the health department is not agreed to by the voluntary agency, or the activity of the voluntary agency may not be approved of by the health department. How can these difficulties be adjusted? They must be settled for the better promotion of public health and for the avoidance of disagreement and for the improvement of the health and medical care of the public and the practice of medicine.

In the autumn of 1925, a physician in New York invited representatives of the voluntary health agency, the state health department, and the state medical society for dinner and an informal conference. At this conference a number of these problems were discussed in considerable detail. This meeting was followed by a series of conferences which brought about a definite realization of the difficulties and finally resulted in the appointment of a committee on public health relations of the state medical society, which has been holding meetings regularly during the present winter with representatives of the voluntary health agency. Although no definite agreement has as yet been reached, both groups are in definite agreement that the health department and voluntary agency must both carry on their activities and that the advice and counsel of the county or local medical society must be sought before a new activity is inaugurated, in particular in regard to matters relating to the appointment and remuneration of physicians. This seems to be the most profitable method of securing progress—conference and agreement, and if not complete agreement, compromise.

2. In the relations between the voluntary health agency and the health department there is a greater difficulty, for the voluntary agency must primarily work in harmony with the health department in order to secure the best results; but occasions do arise when a large number of prominent physicians and health workers and others are in agreement that a definite step in advance should be taken by the health department or a marked change in method of administration of a particular health department activity. In instances of this kind there are health officials who believe that no matter what the health officer desires to do he should be supported.

On the other hand, the voluntary health agency believes that it has the right as a group of citizens definitely to criticize and oppose a policy, plan or method of a governmental official. The latter question can never be solved completely, but many disagreements could be avoided by more frequent conference between the interested parties, by the health department seeking the cooperation and support of the voluntary health agency, and by the latter taking counsel with the health officer and advising him of its plans.

REPORT ON THREE HUNDRED THOUSAND KAHN TESTS*

R. L. KAHN, D.Sc.
PEARL L. KENDRICK, M.S.
AND
J. L. LANDAU
LANSING, MICH.

The first report on the Kahn precipitation test appeared early in 1922.[1] By July of that year, more than 15,000 comparative Wassermann and Kahn tests had been completed in the laboratories of the Michigan Department of Health. The observations indicated that to report both tests to Michigan physicians would give them more dependable results than the Wassermann test alone. Accordingly, July 1, 1922, the Michigan Department of Health began to report the Kahn test in addition to the Wassermann on all blood specimens received in the laboratories for the serum diagnosis of syphilis.[2]

By the latter part of 1923, the Kahn test had become improved and standardized.[3] The necessity for incubation had been eliminated, making it possible to read the results of the test within a few minutes after mixing serum with antigen. The preparation and standardization of antigen had been rendered quantitative, assuring a high degree of constancy of results with the test in the hands of different workers. And what is of the greatest importance, the test had been found highly specific for syphilis and in some respects more reliable than the Wassermann test. In addition to the routine test with serum, the test had been applied to the examination of spinal fluids, a procedure had been developed for the quantitative determination of the syphilitic reacting substances in serum, and a presumptive procedure evolved as a check on the routine test and for the detection of minute amounts of reacting substances.[4]

By October, 1925, there was a comparative record of Kahn and Wassermann tests in more than 174,000 serums in the Michigan Department of Health laboratories. Careful study and evaluation of results in this large number of examinations led the commissioner of health and the laboratory director to abandon the Wassermann test and to make the Kahn test the official procedure for the laboratory diagnosis of syphilis.[5] This, we believe, is the first time a public health laboratory had used alone any serum test for syphilis other than the Wassermann. This paper presents a summary of the data on the two tests up to the time of the abandonment of the Wassermann test, and discusses the experience of more than a year and a half with the Kahn test alone.

COMPARATIVE KAHN AND WASSERMANN TESTS

Results with 174,580 Serums.—From November, 1921, to Oct. 15, 1925, a total of 174,580 comparative Kahn and Wassermann tests were performed. The earlier procedure of the Kahn test was used in 43,000 of these tests, and the present standard routine test in

* From the Bureau of Laboratories, Michigan Department of Health.

1. Kahn, R. L.: A Simple Quantitative Precipitation Test for Syphilis, Arch. Dermat. & Syph. **5**: 570 (May) 1922.
2. Young, C. C.: Public Health Value of the Kahn Test for Syphilis, J. A. M. A. **79**: 1674 (Nov. 11) 1922.
3. Kahn, R. L.: The Kahn Precipitation Test for Syphilis Demonstration, Am. J. Pub. Health **14**: 498 (June) 1924.
4. Kahn, R. L.: Serum Diagnosis of Syphilis by Precipitation: Governing Principles, Procedure, and Clinical Application of the Kahn Precipitation Test, Baltimore, Williams & Wilkins Company, 1925.
5. Olin, R. M.: Wassermann Test to Be Replaced by Kahn Precipitation Test for Routine Specimens in the Laboratory of the Michigan Department of Health, J. Michigan M. S. **14**: 541, 1925.

the remaining 131,000. The results are summarized in table 1.

Considering only the results with the present Kahn procedure, it is found that in 127,304 examinations the two methods checked completely; in 3,438 examinations there was relative agreement and in 808 examinations there was no agreement. Of this last number, sixty-seven (8.3 per cent) specimens were positive in the Wassermann and negative in the Kahn test, while 741 (91.7 per cent) were positive in the Kahn and negative in the Wassermann. The histories on the blanks accompanying the specimens indicate that the larger percentage of these 808 specimens were from syphilitic patients under treatment.

The tendency for stronger Kahn than Wassermann reactions is also shown in the 3,438 examinations giving relative agreement. Of this number, 1,045 specimens were positive in the Kahn and doubtful in the Wassermann against eighty-two specimens positive in the Wassermann and doubtful in the Kahn. Further, 1,960 specimens were doubtful in the Kahn and negative in the Wassermann against 351 negative in the

TABLE 1.—*Kahn and Wassermann Tests in 174,580 Serums*

	Kahn		Wassermann		
	Reaction*	Number of Examinations	Positive	Doubtful	Negative
Results based on earlier procedure	Positive	8,120	7,549	395	176
	Doubtful	2,606	143	1,629	834
	Negative	32,304	143	816	31,345
Results based on present procedure	Positive	24,048	22,262	1,045	741
	Doubtful	4,123	82	2,081	1,960
	Negative	103,379	67	351	102,961

	Per Cent Agreement Between Kahn and Wassermann			
	Total Examinations	Absolute† Agreement, per Cent	Relative‡ Agreement, per Cent	No Agreement, per Cent§
Earlier procedure.....	43,030	94.17	5.08	0.74
Present procedure.....	131,550	96.77	2.61	0.61

* Positive reaction = ++++, +++ and ++; doubtful = + and ±.
† Absolute check = positive, negative or doubtful by both methods.
‡ Relative check = positive or negative by one method and doubtful with the other.
§ No check = positive by one method and negative by the other.

Kahn and doubtful in the Wassermann. A large number of these 3,438 specimens also were from treated cases.

Results in 8,661 Treated Cases.—In order to get the quantitative picture of the results in serums from treated cases, it was necessary to study the data in a large number of specimens from patients with syphilis known to be under treatment. A tabulation was made over a definite period of time of the results obtained with both tests on all specimens from syphilitic patients definitely designated on the history blanks as under treatment. A record of 8,661 examinations was obtained from July 1, 1923, to Oct. 15, 1925, and the results are summarized in table 2. Of the 2,934 specimens showing disagreement in results, 2,340 gave stronger Kahn reactions than Wassermann, while 594 gave stronger Wassermann reactions.

Results with 1,184 Spinal Fluids.—Recently, Keim and Kahn[6] reported a comparative study of Wassermann and Kahn tests in 1,000 spinal fluids. The study included 222 cases of general paralysis; 124 of tabes dorsalis; 387 of the diffuse type of neurosyphilis; 250 cases of syphilis with apparently no neurologic involvement, and seventeen cases that showed central nervous system involvement of a nonsyphilitic nature. The authors concluded that "the Kahn precipitation test compares favorably in specificity and sensitiveness with the Wassermann test."

In addition to these 1,000 cases, in which the Kahn tests were performed in this laboratory, 1,184 spinal fluid examinations are summarized in table 3. Of this

TABLE 2.—*Kahn and Wassermann Tests in 8,661 Treated Cases*

Number of Specimens	Kahn Results	Wassermann Results	Number of Specimens	Kahn Results	Wassermann Results
Kahn and Wassermann Results Identical (5,727)					
2,155	++++	++++	184	+	+
242	+++	+++	114	±	±
251	++	++	2,781	−	−
Wassermann Results Stronger (594)			Kahn Results Stronger (2,340)		
183	+++	++++	310	++++	+++
38	++	++++	201	++++	++
11	+	++++	106	++++	+
4	±	++++	30	++++	±
3	−	++++	13	++++	−
103	++	+++	239	+++	++
22	+	+++	187	+++	+
4	±	+++	59	+++	±
4	−	+++	60	+++	−
73	+	++	242	++	+
10	±	++	105	++	±
14	−	++	172	++	−
45	±	+	192	+	±
41	−	+	220	+	−
36	−	±	184	±	−

number, 471 were positive and 556 were negative with both the Kahn and Wassermann tests. Thirty-three fluids were stronger in the Kahn, forty-four stronger in the Wassermann, and eighty were anticomplementary with this method and either positive or negative in the Kahn.

COMMENT ON KAHN TESTS WITHOUT WASSERMANNS

From Oct. 15, 1925, when the Michigan Department of Health abandoned the Wassermann test, to April 15, 1927, a total of 125,000 Kahn tests were reported to Michigan physicians;[7] not only have there been no complaints during this time, but considerable satisfaction

TABLE 3.—*Comparative Results of Kahn and Wassermann Tests with 1,184 Spinal Fluids*

	Number of Specimens	Wassermann Results	Kahn Results
Results same with the two tests.....	471	Positive	Positive
	556	Negative	Negative
Fluids anticomplementary (A C) in Wassermann.....	69	A C	Positive
	20	A C	Negative
Results stronger with Kahn test.....	17	Doubtful	Positive
	8	Negative	Doubtful
	9	Negative	Positive
Results stronger with Wassermann test.....	17	Positive	Doubtful
	11	Doubtful	Negative
	16	Positive	Negative

has been expressed by physicians throughout the state. Physicians have been particularly pleased with the increased speed of service. Most specimens are reported between four and eight hours after their receipt in the laboratory, and all within twenty-four hours. In an emergency case, such as in a blood transfusion, a Kahn report is made within an hour.

The acceptability of the Kahn test is due to several factors. The test is highly specific for syphilis; it is relatively free from sources of error; it is not influenced by anticomplementary serums, and its results may be obtained within a short space of time.

6. Keim, H. L., and Kahn, R. L.: Clinical Studies on the Kahn Reaction for Syphilis, J. A. M. A. **84**: 881 (March 21) 1925.

7. This number represents that reported from the Lansing, Grand Rapids and Houghton laboratories of the Michigan Department of Health.

Since the Michigan Department of Health began using the Kahn test alone, many other institutions have taken the same step. In the tropics and in other parts of the world where climatic, geographic or other conditions make the use of the Wassermann test almost prohibitive because of its employment of unstable reagents and its general complexity, laboratories are instituting the Kahn test because of its comparative simplicity and ready availability.

SUMMARY

Comparative Kahn and Wassermann results with 174,580 serums indicate that the Kahn test is somewhat more sensitive than the Wassermann as it was employed in this laboratory.

Comparative Kahn and Wassermann results in 8,661 cases of syphilis under treatment also indicate greater sensitiveness of the Kahn test.

Similar comparative studies in 1,184 spinal fluids indicate comparable sensitiveness with the two methods, except that the anticomplementary properties of fluids which prevent a reading of the Wassermann do not interfere in any way with the Kahn reaction.

Experience with more than 300,000 Kahn tests reported to physicians indicates that this test is a dependable laboratory method in the diagnosis of syphilis.

SPIROCHETAL JAUNDICE

REPORT OF A CASE *

HARRY H. TOWLER, M.D.
AND
JOHN E. WALKER, M.D.
Majors, Medical Corps, U. S. Army
WASHINGTON, D. C.

In 1914, Inada and Ido [1] demonstrated that a spirochete is the causative agent of the form of infectious jaundice characterized by sudden onset, high fever, muscle pains, renal injury and a tendency to hemorrhage. The condition is frequently referred to as Weil's disease. In Germany, Huebener and Reiter,[2] and Uhlenhuth and Fromme [3] reached the same conclusion, independent of the work of the Japanese investigators. Because of its special morphologic features, a new genus was formed for the organism by Noguchi,[4] and it is now generally known in this country and in England as *Leptospira icterohaemorrhagiae*.

The relation of infectious jaundice, as seen in this country, to spirochetal jaundice, has given rise to considerable discussion. In 1923, Blumer [5] was able to state that spirochetes had not been demonstrated in a single case of jaundice in the United States, and he rightly considered as entirely gratuitous the general assumption that all cases of infectious jaundice were spirochetal in origin. During the past several years, however, evidence has accumulated which seems to indicate that the disease may not be at all infrequent. Altogether, six cases confirmed by laboratory examinations have been reported in North America, five from the United States, and one from Canada. These cases are briefly reviewed:

CASES PREVIOUSLY REPORTED

CASE 1.[6]—A woman, working in a laboratory in Albany, N. Y., accidentally pricked her finger with the needle of a syringe containing a culture of *Leptospira icterohaemorrhagiae*, isolated from a rat caught at Albany. The incubation time of the infection was seven days, and the diagnosis was confirmed by guinea-pig inoculation. This case is especially instructive clinically in that jaundice was barely perceptible. The true nature of the disease would never have been suspected except for the history of the needle prick. Zeulzer [7] cites from French and German literature five instances of laboratory infection, two of which ended fatally. Another instance is reported by Adamski [8] in Warsaw.

CASE 2.[9]—This case occurred in a man, aged 43, employed in New York state, who slept in a kitchen infested with rats. Clinically, the disease was marked by fever, jaundice, anuria, bloody vomitus, and death in convulsions. Leptospiras were demonstrated at autopsy in sections of the liver and kidney.

CASE 3.[10]—In a man aged 51, living in Camden, N. J., occupation not stated, leptospiras were demonstrated by direct dark field examination of the patient's blood on the tenth day of the disease, an unusual observation. The clinical symptoms (fever, chills, prostration, severe bodily pains, muscular tenderness of the calves and intense jaundice), however, agree well with the diagnosis of spirochetal jaundice.

CASE 4.[10]—A man, aged 44, occupation not stated, living in a cheap lodging house in Philadelphia, had been drenched in the rain one week previous to the onset of the disease. Leptospiras were demonstrated by inoculation of the urine into a guinea-pig on the eighth day of the disease.

CASE 5.[11]—This was a fatal case, occurring in a man, aged 42, employed as a laborer (building excavator) in Philadelphia. The patient was almost afebrile during hospitalization (latter half of disease only). An autopsy was not performed. Leptospiras were demonstrated by direct microscopic examination of the blood on the sixth day of the disease, and by guinea-pig inoculation on the seventh day.

CASE 6.[12]—In a man, aged 48, who had been working in a slaughterhouse in Toronto, Canada, leptospiras were found at autopsy, in sections of the kidney.

It is our purpose to report another case, in which the diagnosis was confirmed by guinea-pig inoculation and culture, and to call attention to certain clinical and epidemiologic features of the disease, as compared to other types of infectious jaundice.

REPORT OF CASE

History.—T. R., an Italian, aged 31, admitted to the Walter Reed General Hospital, Dec. 6, 1926, and employed as a salesman in the vegetable and meat section of a market, gave a negative history, except that he had cut his leg with a meat cleaver about three months before admission. He had not been outside the city of Washington for six weeks prior to the onset of the present illness.

The patient was well until Nov. 30, 1926 (taken as the day of onset), when he began to cough. There were no other symptoms until December 2, when he began to feel "chilly," with aching over the entire body, most severe in the legs and

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* From the Medical Service, Walter Reed General Hospital, and the Department of Preventive Medicine and Clinical Pathology, Army Medical School.

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2. Huebener, H., and Reiter, H.: Beiträge zur Aetiologie der Weilschen Krankheit, Deutsche med. Wchnschr. **42**: 1, 1916.
3. Uhlenhuth, P., and Fromme: Experimentelle Untersuchungen über die sogenannte Weil'sche Krankheit (ansteckende Gelbsucht), Med. Klin. **11**: 1202, 1915.
4. Noguchi, Hideyo: Morphological Characteristics and Nomenclature of Leptospira (Spirochaeta) Icterohaemorrhagiae, J. Exper. Med. **27**: 575 (May) 1918.
5. Blumer, George: Infectious Jaundice in the United States, J. A. M. A. **81**: 353 (Aug. 4) 1923.
6. Wadsworth, Augustus; Langworthy, H. Virginia; Stewart, F. Constance; Moore, Anna C., and Coleman, Marion B.: Infectious Jaundice Occurring in New York State, J. A. M. A. **78**: 1120 (April 15) 1922.
7. Zeulzer, Margarete: Die Spirochaeten, supp. von Prowazek, S., and Nöller, W.: Handbuch der Pathogenen Protozoen, Leipzeig, Barth, 1925.
8. Adamski, J.: Abstr. Trop. Dis. Bull. **23**: 605 (Aug.) 1926.
9. McDowell, E. S.: A Case of Infectious Jaundice, New York State J. Med. **25**: 19 (Jan.) 1925.
10. Sailor, Joseph: Leptospirosis Icterohemorrhagica (Weil's Disease), Am. J. M. Sc. **170**: 332 (Sept.) 1925.
11. Hayman, J. M., and Lynch, F. B.: Spirochetal Jaundice in the United States, Am. J. M. Sc. **173**: 80 (Jan.) 1927.
12. Bates, J. E.: Leptospiros's Icterohemorrhagica (Weil's Disease): Fatal Case, Canad. M. A. J. **16**: 1421 (Dec.) 1926.

back. December 3, he had a severe frontal headache, a slight sore throat, severe backache, and pain and soreness in the chest and abdomen. The cough became slightly productive and "bloody," and his nose bled "most of the time." He was nauseated for four days before admission and vomited several times. He had nocturia and believed that the urine contained blood. He thought that he had had a yellow color for about four days, and felt as if he had a high fever.

Condition on Admission.—The temperature was 98.4; the pulse, 126, and the respirations, 28. There were no visual or auditory disturbances. The pharynx and conjunctivae were markedly injected. Blood pressure was 90 systolic and 60 diastolic. The pulse was irregular. The heart was normal. There were many fine râles over both bases. The spleen was not palpable. The liver extended 2 cm. below the costal margin. Jaundice was marked. The patient looked ill, his face was drawn, he complained bitterly of a severe frontal headache, and was restless. The blood count showed: red blood cells, 3,800,000; white blood cells, 19,000; hemoglobin, 75 per cent; polymorphonuclears, 92 per cent. The urine was bile colored and cloudy; the albumin was double plus; there were many granular casts, and tests were negative for leucine and tyrosine. The Wassermann and Kahn tests were negative. The direct van den Bergh test was positive, prompt and diphasic; the indirect, positive and strong. Urea nitrogen was 62; nonprotein nitrogen, 83 (mg. per hundred cubic centimeters). Blood sugar was 161, and creatinine, 2.

Course in Hospital.—The condition of the patient continued with little change until December 14. His jaundice then became deeper until he was almost of an orange tint. He vomited infrequently but continued to be nauseated. His greatest complaint was headache and general muscular pain. His nose bled repeatedly every day. The bowels became constipated and the stools were of the putty type. Blood and bile were found in the urine every day. The temperature remained below 100 F. this entire period.

December 14, he felt better, was brighter and asked for more to eat. He was having much less muscle pain and was nearly free of headache. The direct van den Bergh test, December 16, gave a diphasic reaction—prompt but clearly diphasic. The indirect test was positive, with 22 van den Bergh units. Nonprotein nitrogen was 29.6; urea nitrogen, 18; sugar 145 (mg. per hundred cubic centimeters). The urine showed a trace of albumin but no casts.

December 21, he complained of feeling weak and of having a slight headache. His temperature rose to 101.4 F. The following day it was 102 and the next day, 103. Except for the feeling of weakness and a slight headache, there was no repetition of the previous symptoms. This condition continued for nine days, sometimes with a temperature as high as 104. On the 30th this became normal and remained normal until his discharge, January 15.

During the attack the patient lost about 40 pounds (18 Kg.). His jaundice cleared very gradually, and a tinge remained in the sclerae at the time of his departure. There was extensive falling out of the hair during convalescence.

Detection and Culture of Causative Organism.—December 7 (the ninth day of the disease), 3 cc. of citrated blood was injected intraperitoneally into each of two white half-grown guinea-pigs. The direct examination of this blood with the dark field microscope was negative for leptospiras. Eight days after the injection of the blood both pigs showed marked jaundice, especially evident in the sclerae, the ears and about the genitalia. Direct microscopic examination of the blood of the pigs showed motile leptospiras, about one to every three fields. One pig died on the afternoon of the eighth day, and the other on the ninth day. Autopsy showed hemorrhagic areas from 2 to 4 mm. in diameter in the lungs, intense jaundice, and cloudy swelling of the viscera. Motile leptospiras were found in the heart's blood, and in great numbers in emulsions of the liver.

Two drops of heart's blood from one of the pigs was placed in Noguchi's leptospira medium.[13] Four days later, microscopic examination of the medium showed growth of the organism in pure culture. Since then, the culture has been carried along without difficulty in successive transfers.

On the twentieth day of the disease, two guinea-pigs were each injected with 3 cc. of blood. Two additional pigs were injected on the twenty-second day of the disease. None of these four pigs developed jaundice or other sign of the disease.

The urinary sediment of the patient was examined twice (the twentieth and thirtieth days of the disease). Leptospiras were not found.

13. The following formula was used: Physiologic sodium chloride solution, 8 parts; rabbit serum, 1 part; nutrient (2 per cent) agar, 1 part; "rabbit hemoglobin," 0.2 part. The "rabbit hemoglobin" was prepared by adding 1 cc. of rabbit's blood to 3 cc. of sterile distilled water.

GENERAL FEATURES OF THE DISEASE; LABORATORY DIAGNOSIS

The symptoms of the patient seen by us agree closely with the disease as described by Japanese and Europeans. The absence of fever at the beginning of hospitalization is undoubtedly to be explained by the fact that the patient was not under observation during the first several days. Following Inada,[14] the typical case of the disease may for purposes of clinical description be divided into three stages:

Febrile Stage.—From the first to the fifth day. Initial chill usually, high fever; headache; cramping muscular pains, especially of the calves; frequently symptoms simulating meningitis (Zeulzer,[7] Martin and Pettit[15]); marked congestion of the conjunctivae; and albumin, casts and possibly red blood cells in the urine. The blood is always positive on guinea-pig inoculation during the first four days, though the chance of demonstrating the organism in this manner diminishes after this time.

Icteric Stage.—From the sixth to the thirteenth day. The symptoms and fever of the first stage decrease. Icterus and a hemorrhagic tendency make their appearance. The hemorrhagic tendency is not so frequent in European cases. There is marked general weakness. Hiccup is frequent. In fatal cases, death occurs during this stage, usually with convulsions and other symptoms of uremia.[16] The mortality in Europe varies in different statistics between 5 and 18 per cent. In Japan the mortality is higher: from 11 to 48 per cent.

Convalescent Stage.—From the fourteenth day to recovery. There is a gradual subsidence of the icterus and ordinarily continued improvement until complete recovery. Forty per cent of the cases in Europe and 28 per cent of the cases in Japan show a secondary rise of fever, beginning on about the fifteenth day. This secondary rise lasts from four to twenty days. It is not a relapse in the strict sense, for there is no return of the initial symptoms and the blood remains free of the organisms. Also, it seems that death does not ever occur during this secondary fever.

There are exceptions to this typical clinical picture. Patients admitted to the hospital several days after the onset may show little or no fever.

Further, jaundice is not a constant feature of the disease. This is well illustrated by the laboratory infection reported by Wadsworth.[6] From this standpoint the term leptospirosis icterohaemorrhagica is preferable. Stokes, Ryle and Tytler[17] estimate that jaundice was not present in more than 60 per cent of the leptospiral infections occurring in the British army in Flanders.

Although the clinical diagnosis may be made with a high degree of confidence in many patients, it is evident that many atypical cases may be entirely missed without

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16. Costa, S., and Troisier, J.: Deux épidémies d'ictère commun, Ann. de méd. **16**: 180 (Sept.) 1924.
17. Stokes, A.; Ryle, J. A., and Tytler, W. H.: Weil's Disease (Spirochaetosis Icterohaemorrhagica) in the British Army in Flanders, Lancet **1**: 142 (Jan. 27) 1917.

laboratory examinations. The intraperitoneal injection of guinea-pigs, preferably young white animals, with 2 or 3 cc. of blood early in the course of the disease is the method of choice. They become markedly jaundiced after six to nine days, and leptospiras can be demonstrated in the circulating blood or in the tissues.

One gains the impression from Japanese and European authors that it is scarcely worth while to search for the organisms by the direct microscopic examination of the patient's blood, though it is to be noted that in two of the North American cases the diagnosis was promptly made in this manner. In one of them the finding was further controlled by positive animal inoculations. It is possible that concentration methods such as those outlined by Schüffner and Sieburgh [18] may further eliminate delays in diagnoses due to the incubation period in guinea-pigs. Such methods are also rendered desirable by the fact that guinea-pigs vary in their resistance to the organisms.

Later in the disease the organisms appear in the urine, and dark field examination of the centrifugalized sediment offers the best opportunity for demonstrating them. According to Inada,[14] the organisms are found in the urine of practically all patients at about the twentieth day of the disease, most numerous inside of cylindroids. We did not demonstrate the organisms in the urine of our patient, and it is to be regretted that more systematic examinations were not made. Martin and Pettit [15] have not found the organisms so constantly present in the urine as reported by Inada.

EPIDEMIOLOGY

Spirochetal jaundice, as it is occurs in Japan and in Europe, is especially prevalent among rice field workers, miners, sewer workers and ditch diggers, and many cases were recognized among troops occupying trenches in the World War. These occupations all require intimate contact with wet or marshy soil. In a great number of instances reported from England, France, Germany and Holland, the disease developed after swimming in, or falling into, rivers and canals. Butchers and cooks are also recognized as showing a high rate of incidence.

Although the disease may be endemic in certain areas, it occurs principally in sporadic cases, rather than in true epidemic outbreaks. Contact is not usually a means of dissemination, though Lyon and Buchanan [19] observed seven cases in children in which the spread of the disease was best explained on the basis of direct contact. It is to be noted that the American cases so far reported have been sporadic.

Ido, Hoki, Ito and Wani [20] found that a high proportion of wild rats and field mice harbor pathogenic leptospiras. Numerous surveys of rats have been made in practically all parts of the world. The results justify the assumption of the presence of the organisms in an appreciable proportion of rats everywhere. It has generally been supposed that these animals play a large part in the dissemination of the disease among human beings, by contaminating soil, water and food with their excrement. That rats do play a rôle in human infections has been apparently shown by the occurrence of two cases of infection following rat bites.[20]

In recent years interest has been shown in the possible pathogenicity of free-living leptospiras, known to occur widely distributed in nature. As a matter of fact, the organisms were observed in the free-living condition by Wolbach and Binger [21] before it was known that similar organisms were connected with disease. The organisms are present in the water of ditches, ponds and lakes. Hindle [22] cultivated them at will from London tap water, and similar experiments show that they are constantly present in the water supply of Washington. No evidence of pathogenicity has been obtained with the organisms here.

Two instances seem to indicate fairly definitely that these free-living organisms have or may acquire pathogenicity. Buchanan [23] found that leptospiras from a mine induced the typical infection in guinea-pigs, and Uhlenhuth and Zeulzer [24] observed that a water strain became pathogenic after prolonged cultivation in serum.

These observations have reopened the whole question of the epidemiology of spirochetal jaundice. Uhlenhuth and Grossman [25] stress the almost constant association between polluted water and the occurrence of cases in human beings. Rats and man, they believe, acquire the infection from these water or soil sources, although rats do not play any appreciable rôle in the spread of the disease in man. It had previously been demonstrated that pathogenic leptospiras may infect guinea-pigs through the shaven skin, and the skin may be the means of the acquisition of the disease by human beings.

OTHER TYPES OF INFECTIOUS JAUNDICE

With advances in bacteriology and epidemiology, a group of conditions known clinically as infectious jaundice (of unknown etiology) has been gradually reduced. Jaundice due to such conditions as malaria, typhoid, relapsing fever, yellow fever and streptoccal infection has been separated from the general group of "bilious fevers" as they were called in the first half of the nineteenth century and properly classified according to etiology. Spirochetal jaundice (leptospirosis icterohaemorrhagica) represents the latest loss from the general group. It by no means included everything remaining in the group, though this impression might be gained from the almost constant use of the terms spirochetal jaundice, epidemic jaundice, and infectious jaundice as synonyms. As already mentioned, Blumer protested against this assumption in 1923. Garnier and Reilly,[26] and Costa and Troisier [16] have especially attempted to clarify nosology in this field. Most cases of infectious jaundice of unknown etiology fall in one of two general classes:

1. *Catarrhal Jaundice.*—This term is probably not correct anatomically. Garnier and Reilly propose the term "acute afebrile icterus." The disease occurs as sporadic cases. The absence of high fever, prostration and conjunctival congestion separates it clinically from spirochetal jaundice. It appears, however, that there is not a sharp line of demarcation between catarrhal jaundice and mild cases of spirochetal jaundice (Martin and Pettit, Inado).

18. Schüffner, W., and Sieburgh, G.: For the Early Microscopic Diagnosis of Leptospirae (Weil's Disease), Yellow Fever and Others, J. Trop. Med. & Hyg. **30**: 48 (Feb. 15) 1927.

19. Lyon, D. M., and Buchanan, G.: Spirochaetal Jaundice, Report of a Small Epidemic, Lancet **1**: 504 (March 7) 1925.

20. Ido, Y.; Hoki, R.; Ito, H., and Wani, H.: The Rat as a Carrier of Spirochaeta Icterohaemorrhagiae, the Causative Agent of Weil's Disease (Spirochaetosis Icterohaemorrhagiae), J. Exper. Med. **26**: 341 (Sept.) 1917.

21. Wolbach, S. B., and Binger, C. A. L.: Notes on a Filtrable Spirochaete from Fresh Water, J. M. Research **30**: 23, 1914.

22. Hindle, Edward: Leptospira in London Waters, Brit. M. J. **2**: 57 (July 11) 1925.

23. Buchanan, George:. Spirochaetosis Icterohaemorrhagica: The Presence of the Causal Organism in Slime, Brit. M. J. **2**: 990 (Nov. 29) 1924.

24. Uhlenhuth, P., and Zeulzer, M.: Ueber die biologischen und immunisatorischen Beziehungen des Erregers der Weilschen Krankheit zu der freilebenden Wasserspirochaete, Klin. Wchnschr. **1**: 2124 (Oct. 21) 1922.

25. Uhlenhuth, P., and Grossman, H.: Die Aetiologie und Epidemiologie der ansteckenden Gelbsucht (Weilschen Krankheit), Klin. Wchnschr. **5**: 1113 (June 18) 1926.

26. Garnier, M., and Reilly, J.: Essai de classification des ictères infectieux primitifs, Presse méd. **28**: 813 (Nov. 13) 1920.

2. *Epidemic (Nonspirochetal) Jaundice.*—This is the "epidemic and contagious icterus" of Garnier and Reilly. Individual cases are clinically exactly the same as catarrhal jaundice. It is highly contagious, the most notable outbreak in this country consisting of the widespread epidemic reported by Wadsworth [6] and by Williams [27] in New York state during 1921-1922. It is probable that "camp icterus," which has played such a large part in military medicine, is to be classified here rather than as spirochetal jaundice. The 71,000 cases of jaundice occurring among Northern troops in the Civil War are almost always cited in American and European text books as examples of spirochetal jaundice. This is an error, for the individual outbreaks cited in the Medical and Surgical History of the War of the Rebellion [28] were all mild, without fatalities, and usually without fever, very similar to what was observed in the New York epidemic of jaundice.[29]

Troisier and Costa,[16] basing their conclusions on clinical and epidemiologic observations, believe that catarrhal jaundice is only the sporadic form of epidemic (nonspirochetal) jaundice, and they group the two conditions together under the term "ictère commun." Further, as a result of pathologic studies in the same epidemic, they consider that "acute yellow atrophy of the liver" is the severe form of this same "ictère commun." These views agree fairly closely with opinions expressed by Blumer and others.

Troisier,[30] however, later states that there is another form of infectious jaundice of unknown etiology besides "ictère commun." This form is febrile, possibly related to paratyphoid bacilli. Nichols [31] found evidence (agglutinins) of paratyphoid infection in jaundiced American troops returning from Europe. It is apparent that the last word has not been said concerning infectious jaundice of unknown etiology, and the situation is further complicated by the fact that neither the clinical nor the laboratory diagnosis of spirochetal jaundice is on an absolutely certain basis, especially as far as negative results are concerned.

RELATION OF SPIROCHETAL JAUNDICE TO YELLOW FEVER

Noguchi [32] described an organism, *Leptospira icteroides,* similar morphologically to *Leptospira icterohaemorrhagiae,* as the causative agent of yellow fever. Although closely related, Noguchi felt that there were enough immunologic differences between the two organisms to separate them. Recently, Theiler and Sellards [33] have reinvestigated the immunologic reactions of the two organisms and are unable to detect any differences. They state that we are faced with two alternatives, between which they do not attempt to decide: first, that *Leptospira icteroides* has nothing to do with yellow fever; second, that yellow fever and spirochetal jaundice are one and the same disease. However interesting speculation may be in this field, the decision between these alternatives, or modifications of these alternatives, must await the results of further investigations. The clinical similarity between spirochetal jaundice and yellow fever has long been recognized, though ordinarily it is only in the tropics that both conditions have to be considered in differential diagnosis.

27. Williams, Huntington: Epidemic Jaundice in New York State, 1921-1922, J. A. M. A. **80**: 532 (Feb. 24) 1923.
28. Medical and Surgical History of the War of the Rebellion, part III, volume I (Medical History), p. 874, Washington, Government Printing Office, 1888.
29. It is also generally the custom to cite the infections mentioned by Larrey (Mémoires de chirurgie militaire et campagnes, volume 2, Paris, Smith, 1812) during Napoleon's Egyptian campaign as probable instances of spirochetal jaundice. It is true that Larrey called attention to the similarity of the symptoms with the symptoms of yellow fever in America. The cases described by him, however, were confined almost entirely to the wounded. The infection developed in the hospital, it seemed to spread by contact, and the severity was directly related to the extent of wound gangrene. These unusual features place the retrospective diagnosis of these cases on an exceedingly frail basis.
30. Troisier, J.: L'ictère commun: ses formes cliniques, Presse méd. **55**: 509 (June 6) 1925.
31. Nichols, H. J.: Agglutination of Typhoid Group of Organisms in Cases of Jaundice Among Vaccinated Persons, J. A. M. A. **81**: 1946 (Dec. 8) 1923.
32. Noguchi, Hideyo: Comparative Immunological Studies on Leptospira Icteroides and Leptospira Icterohaemorrhagiae, J. Exper. Med. **31**: 135 (Feb.) 1920.
33. Theiler, M., and Sellards, A. W.: The Relationship of L. Icterohaemorrhagiae and L. Icteroides as Determined by the Pfeiffer Phenomenon in Guinea-Pigs, Am. J. Trop. Med. **6**: 383 (Nov.) 1926.

SUMMARY

The case seen by us, from which we cultivated *Leptospira icterohaemorrhagiae* on guinea-pig inoculation, is apparently the sixth proved case of spirochetal jaundice to be reported in North America.

As usually observed in this infection, our case was sporadic.

Typical cases of spirochetal jaundice show a fairly definite clinical syndrome, consisting of sudden onset, fever and chills, prostration and severe muscle pains, jaundice appearing the fifth or sixth day. Because of the occurrence of atypical cases, laboratory control of the diagnosis by guinea-pig inoculations (early) or examination of urinary sediment (late) is necessary.

Spirochetal jaundice is probably prevalent in the United States, though it includes only a small proportion of cases classified as infectious jaundice (of unknown etiology) before the discovery of *Leptospira icterohaemorrhagiae.*

A review of the literature indicates that the disease is usually associated with polluted water or soil, possibly being caused by leptospiras living free in nature. It is also possible that the rôle played by rats in the dissemination of the disease has been overemphasized.

COMMERCIAL BACILLUS ACIDOPHILUS AND BACILLUS BULGARICUS CULTURES AND PREPARATIONS

BACTERIOLOGIC STATUS *

LAWRENCE H. JAMES, PH.D.
NEW HAVEN, CONN.

The use of *Bacillus acidophilus* in the treatment of abnormal intestinal conditions has attained marked popularity within the last few years, not alone in scientific circles, but with the layman as well. The demand for methods of administration in which the patient can be relieved from immediate dependence on bacteriologist and laboratory has led to the marketing of various kinds of preparations, liquid, solid and semisolid. It is well known that the life duration of such bacterial "cultures" is short, and that the products may become worthless after a comparatively brief period of time. There are few commodities on the retail market the quality of which is so dependent on scientific control as these preparations. The present survey was undertaken in order to obtain more definite information regarding their purity and viability. Because of the close similarity in their nature and uses, both acidophilus and bulgaricus preparations have been included in the study.

Bass,[1] in a brief survey of solid culture products, reports as follows: "In the instance of tablets, none of those examined were found to contain as many as 1,000

* From the Microbiological Laboratory, Bureau of Chemistry, U. S. Department of Agriculture.
1. Bass, C. C.: Transformation of the Intestinal Flora, Ann. Clin. Med. **1**: 25-32 (July) 1922.

viable bacteria of any kind per tablet." He calculates that if all bacteria present had been *B. acidophilus,* "it would take about 1,000,000,000 tablets to contain as many bacilli as are contained in 1,000 cc. of acidophilus milk."

Recently, the Council on Pharmacy and Chemistry [2] of the American Medical Association published the answers to questionnaires submitted to seven well known scientists who have studied the problems of *B. acidophilus* therapy. All consultants agreed that there was no evidence of intestinal implantation with *B. acidophilus* by the use of what are classed in this paper as solid or semisolid cultures. One consultant wrote, "Since acidophilus therapy has been proved to be essentially a bacteriologic phenomenon, the necessity for a large number of viable organisms seems to me evident. My personal experience is that when the count drops below 100,000,000 per cubic centimeter the results are not satisfactory."

In general, all these workers agreed to the conclusion that lactobacilline preparations should contain abundant viable organisms true to the species claimed. The way was thus open for a comprehensive survey of those preparations as found on the market during the summer of 1926. The samples used in this study were obtained by buying containers of each product from the retail market, usually found in pharmacies. One hundred and seven samples, of which thirty-four were broth and twenty-eight milk cultures, and thirty-four tablet, three powder and eight semisolid preparations, were collected from twenty-one cities in nine states and in the District of Columbia. Immediately on receipt at the laboratory, the samples were placed in storage at 10 C. to await examination. Liquid cultures consisted of either milk soured by the desired organism or whey suspensions of bacteria. Solid preparations were either tablets or powder in capsules. Semisolid products were solidified agar or petrolatum plus other ingredients in which bacteria had been suspended.

ANALYSIS OF PREPARATIONS

The routine examination adopted was as follows:

1. Liquid (broth or milk) cultures:

(*a*) One cubic centimeter of the culture was inoculated directly into each of two tubes containing 20 cc. of litmus milk. The largest amount of culture inoculated was 1 cc.

(*b*) One cubic centimeter of the culture was added to 9 cc. of sterile water, and 1 cc. of this dilution was inoculated into the first set of plates. Different platings were made in triplicate with dilutions to 1:100,000,000. The largest amount of culture plated was 0.1 cc.

2. Solid (tablet or powder) preparations:

(*a*) Three tablets or the powder from three capsules was dissolved in 30 cc. of sterile water.

(*b*) One cubic centimeter of this dilution was then added to each of two tubes containing 20 cc. of litmus milk. The largest amount of culture inoculated was 0.1 cc.

(*c*) One cubic centimeter of the dilution used in *a* was seeded in the first set of plates. Higher dilutions were then plated. All platings were made in triplicate. The largest amount of culture plated was 0.1 cc.

3. Semisolid or jelly cultures:

(*a*) Cultures liquefying at 40 C. These usually had a consistency resembling that of petrolatum. A sterile glass tube (inverted 10 cc. pipet with full size opening) was thrust to the bottom of the jelly and the subsample thus obtained blown into a sterile tube. The tube and subsample were placed in a 40 C. bath, where the jelly was melted and could be handled with a previously warmed pipet. After thorough mixing, 1 cc. was transferred to 9 cc. of warmed sterile water and vigorously shaken.[3]

(*b*) Cultures not liquefying at 40 C. These consisted of solidified agar in which bacteria were suspended. The agar was molded in cubes, each wrapped separately. One cube being considered as one dose, it was selected as the unit. Each cube was thoroughly ground in a sterile mortar, after which 10 cc. of sterile water was slowly added, with continued grinding until an even suspension was obtained. Sterile dry sand was used when necessary, but sparingly in order to avoid rupturing the bacteria.

TABLE 1.—*Results of the Examination of Milk Cultures*

Produced by Manufacturer Number	Organisms Claimed	Age of Product*	Bacterial Count per Cc. of Milk: Whey Galactose Agar	Bacterial Count per Cc. of Milk: Plain Agar	Predominating Organisms Found
1†	Acidophilus	+7	1,240,000,000	0	B. acidophilus
	Acidophilus	+6	96,000,000	0	B. acidophilus
	Acidophilus	−5	78,500,000	0	B. acidophilus
	Acidophilus	−31	0	0	
2	Acidophilus and others	X	0	10	
	Acidophilus and others	X	0	0	
	Acidophilus and others	X	0	0	
3	Acidophilus	X	1,700,000	0	Not B. acidophilus
4	Acidophilus	+27	200,000,000	0	
	Acidophilus	+7	300,000,000	0	B. acidophilus
	Acidophilus	−3	200,000,000	0	B. acidophilus
5	Acidophilus	X	30,600,000	0	Mixed, including B. acidophilus
6	Acidophilus	X	120,000,000	23,000	
	Acidophilus	X	832,000	300	B. acidophilus
	Acidophilus	X	450,000	1,500	
7	Bulgaricus	X	1,300,000,000	375	Streptococcus and doubtful B. bulgaricus
	Bulgaricus	X	16,500,000	0	Mixed, including B. bulgaricus
	Bulgaricus	X	475,000	350	Mixed, including B. bulgaricus
8	Bulgaricus	X	3,100,000,000	20	Streptococcus and B. bulgaricus
	Bulgaricus	X	700,000,000	30	Streptococcus
	Bulgaricus	X	550,000,000	30	Doubtful B. bulgaricus
9	.....	X	40,000,000	20	
		X	21,000,000	100	
		X	464,000	0	
10	Acidophilus	X	4,750,000,000	0	Not B. acidophilus
	Acidophilus	X	1,775,000,000	0	Not B. acidophilus
11	Acidophilus	X	520,000,000	200	
	Acidophilus	X	2,160,000,000	1,200	Streptococcus and B. acidophilus

* A number preceded by a plus sign indicates the number of days preceding, and a minus sign the number of days following, the expiration date on which the sample was examined. X indicates absence of any time limit.

† Products 1, 2 and 3 are the same in all tables.

The results of the analysis listed in the accompanying tables include only data of primary interest. The results of the inoculations into litmus milk furnish only comparative information and are not included here. All platings for total counts were made in triplicate, two being in whey-galactose agar and the third in plain agar. One set of whey-galactose agar plates was incubated in an atmosphere of 5 per cent carbon dioxide, after the method of Kulp,[4] and the other incubated in the ordinary manner. In most of the samples, if colonies resembling *B. acidophilus* or *B. bulgaricus* appeared, a slightly greater count was obtained with the use of the carbon dioxide than without. As these counts present

2. Council on Pharmacy and Chemistry, Present Status of Bacillus Acidophilus and Bacillus Bulgaricus Therapy, J. A. M. A. **87**: 172 (July 17) 1926.

3. The weakness of this method is apparent. In all cases but one in which a reaction in milk was obtained, bacteria were found in the water suspension, and the method is believed to give a fair indication of the bacterial status of the product. In one instance in which a typical B. acidophilus reaction was obtained in milk, colonies closely resembling acidophilus were obtained in the agar plates.

4. Kulp, W. L.: The Determination of Viable Lactobacillus Acidophilus, Science **64**: 304-306, 1926.

the commercial product most favorable, the figures obtained from culture in the presence of carbon dioxide are given in the accompanying tables. The platings made with plain agar were intended to show the extent

TABLE 2.—*Results of the Examination of the Broth Cultures*

Produced by Manufacturer Number	Organisms Claimed	Age of Product	Bacterial Count per Cc. of Broth Culture: Whey Galactose Agar	Bacterial Count per Cc. of Broth Culture: Plain Agar	Predominating Organisms Found
1	Bulgaricus	+23	160,000	0	
	Bulgaricus	+6	0	0	
	Bulgaricus	+5	2,100,000	1,700,000	
2	Acidophilus	+38	10	0	Doubtful B. acidophilus
	Acidophilus	+26	10,000	1,300	Doubtful B. acidophilus
	Acidophilus	+21	550,000	0	Doubtful B. acidophilus
	Acidophilus	−1	2,260	0	Doubtful B. acidophilus
3	Acidophilus	+160	28,000,000	6,400,000	Not B. acidophilus
	Acidophilus	+63	250,000,000	0	Not B. acidophilus
	Acidophilus	+3	10,000,000	0	Not B. acidophilus
	Bulgaricus	−24	0	0	
4	Acidophilus	+25	40	10	
		+15	1,800,000	0	B. bulgaricus
		+15	0	0	
	Acidophilus	+10	20,000	80	
	Acidophilus	+7	12,000	8,000	
	Acidophilus	+4	6,000	15,000	
		+1	190	70	B. acidophilus
5	.....	+158	35	0	
	Bulgaricus and acidophilus	+129	0	0	
	Bulgaricus and acidophilus	+122	0	0	
	Bulgaricus and acidophilus	+80	0	0	
	Bulgaricus and acidophilus	+73	0	0	
	Bulgaricus and acidophilus	+66	0	0	
	.....	+34	0	0	
	Bulgaricus and acidophilus	+17	0	0	
	Bulgaricus	X	0	0	
	Bulgaricus	X	0	0	
	Bulgaricus	X	0	0	
6	Acidophilus	+41	0	0	
	Acidophilus	+22	0	0	
7	Bulgaricus	+46	2,000	0	Probably B. acidophilus
	Acidophilus	+35	65,000,000	0	Not B. acidophilus
8	Bulgaricus and acidophilus	X	500,000	800,000	Not B. acidophilus nor B. bulgaricus

of the presence of organisms other than *B. acidophilus* and *B. bulgaricus*.

Pure strains of the predominating type of organism were isolated from the agar plates from as many samples as time would permit. Types which were obviously contaminants, such as spreaders, were not isolated. On the other hand, if only one colony suggesting *B. acidophilus* or *B. bulgaricus* appeared on a plate, care was taken to obtain a culture from it. The identification of the organisms obtained has been made by a study of the following characteristics:

1. Colony type in whey-galactose agar.
2. Gram stain and morphology.
3. Reaction in litmus milk.
4. Acidity produced in milk.
5. Fermentation of levulose, maltose and sucrose.

It is recognized that these tests do not furnish positive identification of unknowns of the type considered here. With the possible addition of the medium recommended by Albus and Holm,[5] however, they constitute practically our sole means of differentiation in vitro.

5. Albus, W. R., and Holm, G. E.: The Effect of Surface Tension upon the Growth of Lactobacillus Acidophilus and Lactobacillus Bulgaricus, J. Bacterial. **12**: 13-18 (July) 1926.

Gram stained preparations were made from young whey-galactose agar colonies. Colony types were studied in plates of whey-galactose agar, which was made according to Rettger and Cheplin.[6] The titration of the acdiity was made in litmus milk and calculated as lactic acid. Kulp and Rettger[7] have shown that differentiation in sugar broths which have been sterilized in the usual manner, i. e., by autoclaving, is only partially reliable, and that the use of test broths wherein the carbohydrate has been sterilized by filtration leads to more clear-cut results. For this reason, solutions of the test sugars were sterilized by being passed through Berkefeld filters and then added to sterile casein-digest broth. The inoculum was obtained by growing the organism in whey-galactose broth, removing by centrifugalization, washing in saline solution, recentrifugalizing, and resuspending in saline

TABLE 3.—*Results of the Examination of the Solid Cultures*

Produced by Manufacturer Number	Organisms Claimed	Age of Product	Bacterial Count per Tablet: Whey-Galactose Agar	Bacterial Count per Tablet: Plain Agar	Predominating Organisms Found
1a*	Bulgaricus and acidophilus	+167	1,480	3,000	Streptococcus
	Bulgaricus	+146	0	0	
	Bulgaricus	+140	3,000	70	
	Bulgaricus	+136	0	30	
	Bulgaricus	+92	102,000	80,500	Streptococcus
	Bulgaricus and acidophilus	+91	130	340	
	Bulgaricus and acidophilus	+60	560	600	
	Bulgaricus	+49	10	50	
	Bulgaricus	+35	30	50	Streptococcus
2	Acidophilus	+57	400,000	50	B. acidophilus
	Acidophilus	+49	1,600,000	30,000	Probably B. acidophilus
	Acidophilus	+36	1,800,000	60	Probably B. acidophilus
	Acidophilus	+30	800,000	110	Probably B. acidophilus
	Acidophilus	+17	1,500,000	10	B. acidophilus
	Acidophilus	+10	140,000	40	Probably B. acidophilus
	Acidophilus	−20	113,000	30	Probably B. acidophilus
3	Bulgaricus	+78	2,000	50	
	Acidophilus	+45	1,070	900	Not B. acidophilus
	Acidophilus	+35	10,000,000	4,000,000	Streptococcus
	Acidophilus	+31	6,000,000	400,000,000	Staphylococcus
4	Bulgaricus	+65	340	20	Probably B. bulgaricus
	Bulgaricus	+64	16,000	10	Probably B. bulgaricus
	Bulgaricus	+35	95	20	Probably B. bulgaricus
	Bulgaricus	+35	10	60	Probably B. bulgaricus
	Bulgaricus	+7	30	65	Probably B. bulgaricus
5	.....	+286	220	0	Streptococcus
		+262	0	0	
		+178	10	10	Streptococcus
	Bulgaricus	+148	0	0	
		+139	0	70	
		+31	0	0	
	Bulgaricus	−2	0	55	
6	Bulgaricus	X	30	80	
	Bulgaricus	X	30	105	
	Bulgaricus	X	0	5	
7	Bulgaricus	+94	0	20	
8	Acidophilus	X	0	20	

* 1a is a different producer from 1.

solution. As a control on the viability of the inoculum after the foregoing treatment, whey-galactose agar plates were seeded after the inoculation of the sugar broths. Only those organisms

6. Rettger, L. F., and Cheplin, H. A.: The Transformation of the Intestinal Flora, with Special Reference to the Implanation of Bacillus Acidophilus, Yale University Press, 1921.

7. Kulp, W. L., and Rettger, L. F.: Comparative Study of Lactobacillus Acidophilus and Lactobacillus Bulgarius, J. Bacteriol. **9**: 357-394 (July) 1924.

were studied that produced a reaction in litmus milk apparently identical with that of *B. acidophilus* or *B. bulgaricus*.

SUMMARY

In summarizing the results of the survey, several pertinent facts are worthy of mention: 1. The milk cultures showed the highest average counts, the whey cultures next to the highest, and the solid cultures the lowest (omitting the inaccurate results of the semisolid cultures). 2. All samples of one type from any one producer, examined before the expiration date, were more or less similar in quality, regardless of their age. 3. Liquid and solid preparations marketed by the same producer were somewhat similar in quality. 4. Contaminating organisms were more common in solid than in broth or milk cultures. 5. Of thirty-three strains of organisms isolated from cultures claimed to be

TABLE 4.—*Results of the Examination of the Semisolid Cultures*

Produced by Manufacturer Number	Organisms Claimed	Age of Product	Bacterial Count per Cc. of Sample: Whey-Galactose Agar	Bacterial Count per Cc. of Sample: Plain Agar	Predominating Organisms Found
1	Acidophilus	+91	8,000	0	Not B. acidophilus
2	Acidophilus	+418	20	0	
	Acidophilus	+416	0	0	
	Acidophilus	+408	0	30	
	Acidophilus	+315	40	0	Probably B. acidophilus
	Acidophilus	+246	160	0	Probably B. acidophilus
	Acidophilus	−1	0	0	
3	Acidophilus	Examined 116 days after issued	35 per block	100 per block	

B. acidophilus, nineteen showed a possibility of being that organism and fourteen did not; and of fifteen organisms isolated from preparations claimed to be those of *B. bulgaricus*, ten showed a possibility of being that organism and five did not.

CONCLUSIONS

Therapeutic claims were disregarded in this survey. Of 107 samples examined, thirteen produced the species claimed on the label in reasonably pure form and in satisfactory number. Of the remaining samples, fifteen were sufficiently pure and presented viable organisms in sufficient number to have possible value. The others were worthless as representing cultures of the species claimed.

There is need of revision of the present methods of marketing acidophilus and bulgaricus cultures and preparations, and of adequate, scientific supervision of the purity and viability of such products.

Human Factor in the Causation of Accidents.—A special personal susceptibility to accident exists, inherent in the individual and differing from one individual to another. A comparatively small number of workers is responsible for an undue proportion of accidents, although all are exposed to the same risk. This small group is also found to have higher invalidity rates, and to pay more visits to the ambulance room for minor sicknesses; similarly it sustains more accidents at home as well as in the factory. Clearly a promising method of tackling reduction of accidents is to exclude from risk those possessing this tendency to sustain accidents. One question awaits further investigation, namely, whether any relation exists between the tendency to sustain major and minor accidents.—Medical Research Council 34, London, 1926; Abstr. *Bull. Hyg.*, December, 1926.

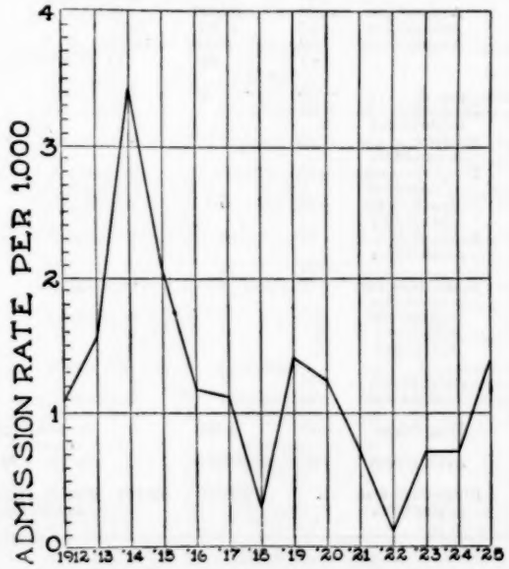
HEAT INJURIES

A PREPARATORY STUDY FOR EXPERIMENTAL HEAT-STROKE

E. G. WAKEFIELD, M.D.
AND
W. W. HALL, M.D.
Lieutenant, M. C., U. S. Navy
WASHINGTON, D. C.

In the latter part of the summer of 1926, several patients suffering from the injurious effects of heat were admitted to the medical service of the Naval Hospital, Washington, D. C., and all recovered uneventfully except one. This patient was left with some mental confusion and somatic delusions which he still had at the time of discharge from the hospital. A review of the subject at this time revealed that very little is known of the mechanism of production of the various forms of heat injury.

As a preparatory study to experimental investigation in heat-stroke in dogs, it was decided to make a study



Heat injuries in the United States Navy, including heat cramps, heat exhaustion, sunstroke and thermic fever, for the fiscal years 1912-1925.

of heat injury in the United States Navy over a period of several years. In this report, besides giving the aspects of heat injury in the navy, we shall give as concisely as is possible an historical sketch which includes the theories, clinical observations and studies in the past. These will be referred to in a future communication.

The various heat injuries that occur in the fire and engine rooms of ships have been of particular interest to naval medical men since the advent of steamships in the navy. Many accurate descriptions have been given of these, at times, wholesale injuries. To attempt to add to these descriptions would be superfluous. Gihon [1] was the first medical man of our navy to mention the effect of heat on men in the fire room of naval vessels. Gihon writes: "Dr. Kitchen informed me that while surgeon of the monitor *Dictator* it was common for men to be brought to him for treatment with coma, stertorous breathing, great heat of the skin, full quick pulse and often convulsions. The cause was

1. Gihon, A. L.: Naval Hygiene, Government Printing Office, Washington, 1873, p. 109.

manifestly enough the exhausting labors of a watch in the fire room, where the temperature averaged 145 degrees." In another communication this writer [2] cites that instances of heat-stroke were undoubtedly produced in the "old navy," when the significantly termed "sweat-box" was a favorite means of punishment. "Men fell forward unconscious, with burning skin and bounding pulse, when the doors were opened after a brief period of confinement in the coffin-like boxes in which they were compelled to stand upright, and were placed on the sicklist as suffering from that indefinite affection 'adynamia.'"

TABLE 1.—*Heat Injuries in the Navy from July 1, 1911, to July 1, 1926*

Year	Average Complement, Medical Returns	Heat Cramps	Heat Exhaustion	Sunstroke	Thermic Fever	Deaths from Sunstroke	Deaths from Heat Exhaustion	Invalided, from Sunstroke	Invalided, from Heat Exhaustion	Heat Cramps, Total Days Sick	Heat Exhaustion, Total Days Sick	Sunstroke, Total Days Sick	Thermic Fever, Total Days Sick
1912	69,926	..	63	3	11	..	1	..	1	..	330	9	67
1913	65,926	61	32	1	5	..	..	..	2	111	243	2	33
1914	67,141	94	113	10	13	2	2	1	..	187	657	90	46
1915	68,075	68	60	5	9	..	1	..	..	154	302	13	29
1916	69,294	59	53	3	16	..	..	..	..	167	286	23	29
1917	245,580	89	163	12	16	..	1	..	..	266	640	177	60
1918	503,792	115	1	27	12	1	..	4	..	267	2	351	51
1919	298,774	152	210	16	7	..	4	..	..	403	938	57	52
1920	140,773	50	105	8	13	..	..	..	..	114	868	226	55
1921	148,861	28	71	7	3	..	..	..	..	135	356	49	89
1922	122,126	14	1	3	1	1	..	..	..	45	2	85	2
1923	116,565	19	61	1	3	..	2	..	..	42	249	2	8
1924	119,280	20	57	8	1	..	1	..	..	55	146	67	7
1925	115,391	95	60	2	4	..	..	..	..	271	256	25	7

In 1913, Fisk [3] supplemented Gihon's work and brought the available naval statistics up to July 1, 1911. The many factors of hygienic importance concerning the clinical aspects of heat injuries have been described from time to time. Of these reports, the following may be mentioned along with Gihon's and Fisk's works: Gatewood,[4] Grunwell,[5] Pryor,[6] and, more recently, Phelps.[7]

Table 1 and the chart present the heat injuries as they have occurred in the navy from July 1, 1911, to July 1, 1926. During this period, there were 2,049 instances of heat injury, sixteen deaths and eight invalided from the service. There was a total of 9,234 days sick. The percentage of mortality, based on morbidity, was 0.07; and the percentage invalided from the service, based on morbidity, was 0.03. The total number of days sick is a little high because all those admitted with a heat injury diagnosis which was changed while the patient was under observation were disregarded. The average number of days sick was 4.5. This study supplements Fisk's work, which incorporated Gihon's statistics. Fisk's table showed a total of 2,855 cases, thirty-five invalided from the service, twenty-two deaths and 12,849 days sick, with an average of 4.5 days sick. The remarkable thing shown in table 1 and the chart is the relatively small increase in the number of heat injuries with an actual decrease in rate per thousand in the navy during the Great War in view of the fact that there were so many more men in the service at that time.

Beginning with statistics of July 1, 1923, and ending Jan. 1, 1926, a study was undertaken to see whether there was any evidence which indicated that acclimation was a factor in the production of heat injury. The United States and its possessions were divided into two sections. The total number enlisting from the various states during this period was ascertained from Bureau of Navigation reports. From the "F" cards on file in the Bureau of Medicine and Surgery, the dates of birth, the approximate dates of enlistment, and the places of birth of the men suffering from heat injuries in this period were ascertained. This, in all probability, for practical purposes, formed a rough basis in determining whether a man was a native of the northern or southern section of the United States. The results of the study are presented in table 2.

This study would appear to indicate that those born and reared in the northern part of the United States are somewhat more susceptible to heat than those of the southern section. If this statistical analysis can be trusted, it supports the common belief that acclimation is a factor in the development of heat injuries.

TABLE 2.—*Acclimation as a Factor in the Production of Heat Injury*

	Number Enlisted			Instances of Heat Injuries
Northern Section	Fiscal Year 1924	Fiscal Year 1925	Fiscal Year 1926	
Connecticut	682	354	433	5
Illinois	884	469	344	7
Indiana	723	248	227	10
Iowa	488	328	268	2
Kentucky	266	308	183	4
Massachusetts	1,375	745	669	14
Michigan	1,068	705	443	2
Minnesota	737	247	240	5
Nebraska	398	297	271	1
New Hampshire	.....	14	.....	...
New Jersey	.....	222	267	10
New York	2,302	1,702	1,206	20
Ohio	880	338	281	1
Oregon	477	544	405	...
Pennsylvania	1,940	1,818	665	30
Rhode Island	524	311	246	2
Utah	521	58	147	...
Washington	207	.....	315	3
Wisconsin	277	.....	168	5
Totals	13,828	8,768	6,718	121
Grand total of enlistments during the period				29,294
Percentage of incidents of heat injuries				0.0041
Southern Section				
Alabama	787	257	353	9
Arkansas	492	286	411	1
California	2,423	1,291	1,791	2
Colorado	568	308	1,369	3
Cuba	8	4	.....	...
District of Columbia	235	388	8	3
Florida	216	335	69	5
Georgia	1,167	509	371	10
Guam	36	55	3	1
Louisiana	524	456	239	5
Maryland	970	491	311	2
Missouri	2,243	1,429	708	9
North Carolina	1,183	528	429	15
Philippine Islands	775	178	275	4
Samoa	30	30	21	...
South Carolina	50	41	.....	4
Tennessee	724	351	224	7
Texas	916	400	367	4
Virginia	1,076	.....	49	7
Totals	14,884	7,306	7,009	89
Grand total of enlistments during the period				29,198
Percentage of incidents of heat injuries				0.0030

HISTORICAL

Heat-stroke or sunstroke is the oldest known disease.[8] The ancients associated the disease with Sirius, the dog star, and dog days. This association is prob-

2. Gihon, A. L.: Heatstroke, Twentieth Century Practice, New York **3**: 751-786, 1895.

3. Fisk, C. N.: The Effects of Exposure to Heat on the Working Organism, Am. J. M. Sc. **145**: 565-585, 1913.

4. Gatewood, J. D.: Naval Hygiene, Philadelphia, P. Blakiston's Son & Co., 1909.

5. Grunwell, A. G.: Report of Sixteen Cases of Heat Prostration, with Remarks on Etiology, U. S. Naval M. Bull. **3**: 223-230 (July) 1909.

6. Pryor, J. C.: Naval Hygiene, Philadelphia, P. Blakiston's Son & Co., 1918, pp. 367-373.

7. Phelps, J. R.: Heat Cramps and Heat Exhaustion on Board Ships of the Navy in Recent Months, U. S. Naval M. Bull. **24**: 145-154 (Jan.) 1926.

8. Osler, William; and McCrae, Thomas: Principles and Practice of Medicine, ed. 10, New York, D. Appleton & Co., 1925, p. 378.

ably accounted for when it is recalled that in the summer months Sirius follows the sun and is seen in the evening twilight. The oldest records of the disease are the biblical cases. In the fourth book of the Kings, Chapter IV, verses 18 to 20, inclusive, the following is found: "And the child grew. And on a certain day, when he went out to his father to the reapers, he said to his father: 'My head acheth, my head acheth . . .' And when he had taken him, and brought him to his mother, she set him on her knees until noon, and then he died." In the apocryphal book of Judith, chapter VIII, verses 2 and 3, is found: "And her husband was Manasses, who died in the time of the barley harvest; for he was standing over them that bound sheaves in the field; and the heat came upon his head, and he died in Bethulia, his own city, and was buried there with his fathers." One of the oldest records of the occurrence of the disease at sea is that of the British frigate *Liverpool*. In 1841, this vessel was proceeding from Muscat to Bushire; the weather gradually became warmer; double awnings were spread, the decks kept constantly wetted, and every precaution used to prevent exposure of the men; yet in one day, from a species of coup de soleil, three lieutenants and thirty men were lost. It was stated that at one time the decks resembled a slaughterhouse, so numerous were the bleeding patients.[9] In Peking, in July, 1743, 11,000 persons are said to have perished on the streets from the effects of heat.[10]

From biblical times until 1852, all instances of heat-stroke were confounded with apoplexy. This point is clearly illustrated by the writings of Forestus,[11] in 1562. Baglivi[12] of Rome, in 1694 and 1695, observed an epidemic of apoplexy which was imputed to the unusual condition of the weather in those years. About the first of October, 1695, there were fifteen days of rain which was followed by an outburst of apoplexies. Baglivi must have realized the many factors that entered into the disease. He mentions mental distress (referring to the wars in Europe at this time), the rain, the wind, the earthquakes and the inadequate supply of food. Lancisi, according to Levick,[13] was the first to publish evidence of the influence of hygrometry in the etiology of heat affections. Heat-stroke in animals other than man was recorded by Mosley[14] in 1803.

In 1789 Dr. Benjamin Rush[15] called attention to a disorder occasioned by the drinking of cold water in warm weather and described the symptoms of heat-stroke very accurately. The drinking of water, of course, was a symptom of the disease rather than the cause. The idea that the intake of cold water was the cause of the disease went so far that in the summer of 1814 the pumps in Philadelphia were posted with cautions, by the order of the Humane Society, against sudden death from drinking cold water.[16] J. Watts, Jr.,[17] protested against attributing to water the effects of heat. This observer was probably the first to note that the body temperature was elevated in major heat affections. W. W. Gerhard[18] clearly separated the instances of heat-stroke from apoplexy by noting that there were no gross changes in the brain in the former. Andral[19] of Paris was the first to note the relation between high atmospheric temperatures and heat-stroke. He gave the first accurate account of the major postmortem findings, namely, petechiae, liquid blood and venous engorgement. In 1834, J. J. Russell[20] of the British army noted pulmonary congestion, and he erroneously concluded that the chief seat of the mischief was in the chest.

Heat-stroke occurring in places other than in the sunlight was first fully described by Condie.[21] This observer was the first to emphasize the humidity of the air as an important etiologic factor. His patient, a negro preacher, was suddenly attacked, during his sermon in a crowded and overheated church, by convulsions alternating with tremors. The pupils were dilated, the pulse thready, and the skin covered with cold, clammy sweat. In brief, this is a good clinical history of heat-stroke.

The best illustration of the confusion which arose after the observation had been made that major heat injuries could be produced elsewhere than in a blazing sunshine is found in the many names the disease has received—heat-stroke, ictus caloris, prostratio thermica, coup de chaleur, colpo di calore, Hitzschlag, Warmschlag, heat-apoplexy, heat-asphyxia, heat-dyspnea, heat-exhaustion, thermal, thermic fever, ardent fever, phrenitis aestiva, phrenitis calenture, erethismus tropicus, insolation and siriasis.

From the time of Claude Bernard's[22] experimental work on the effects of heat, the theories of the disease are largely based on experimental observations, which will be given in a future communication.

The first therapeutic measures recorded consisted largely of "spiritual healing," but the possibility of a physical element is introduced. After the Staff of the Man of God had been placed on the face of the Shunammite's child and failed, we read: "And when Elisha was come into the house, behold, the child was dead, and laid upon his bed. . . . And he went up, and lay upon the child, and put his mouth upon his mouth, and his eyes upon his eyes, and his hands upon his hands; and he stretched himself upon the child, and the flesh of the child waxed warm." Artificial respiration or the carbon dioxide therapy? Bloodletting, the therapeutic sheet-anchor through all the ages, a procedure which Weir Mitchell insisted on having after he had largely recovered from sun-stroke (eleven days), has been a favorite treatment in the past and even now in "selected cases." Lancisi, as early as 1739, recommended the use of iron in the debilities following heat injuries. The origin of this beneficial therapy undoubtedly is due to the severe secondary anemia which followed the bloodletting

The use of cold applications was first mentioned by Coates, and became so popular, and perhaps overused, that in 1854 Swift[23] made the following statement: "Indiscriminate use of cold affusions is productive of harm. Injurious and often fatal effects result from them." Cautious application of ice over the whole

9. Wellstead: Travels to the City of the Caliphs.
10. Levick, J. J.: Remarks on Sunstroke, Am. J. M. Sc. **37**: 40-55 (Jan.) 1859.
11. Foresti, Domini Petri, Observationum et Curationum Medicinalium ac Chirurgicarum Opera Omina, Francofurti, 1634.
12. Baglivi: The Practice of Physick Reduced to the Ancient Way of Obesrvation, Printed for Andr. Bell (et al.) London, 1704.
13. Levick, J. J.: Heatstroke, Am. J. M. Sc. **36**: 404, 1858.
14. Mosley, A.: Treatise on Tropical Diseases, London, 1803, p. 57.
15. Rush, Benjamin: An Account of the Disorder Occasioned by Drinking Cold Water in Warm Weather and a Method of Curing It, ed. 2 of Medical Inquiries and Observations, Philadelphia, 1789, p. 150.
16. Coates, B. H.: Tr. Coll. Physicians, Philadelphia, **3**: 235, 1858.
17. Watts, J.: Remarks on the Supposed Effects of Drinking Cold Water; Illustrated by Cases Which Occurred During the Summer of 1818, M. & S. Reg., New York, 1818, p. 377.
18. Gerhard, W. W.: Graves' System of Medicine with Additional Lectures, 1848, p. 677.
19. Andral, G.: Reports on Medical Cases, translated by D. Spillan, Philadelphia, 1838, p. 108.
20. Russell, J. J.: London M. Gaz. **18**: 71, 1836.
21. Condie, D. F., in discussion on Dr. Pepper's Communication on Coup de Soleil, Tr. Coll. Phys. Philadelphia **3**: 235, 1858.
22. Bernard, Claude: Lectures to the College of France **4**: 209, 1858.
23. Swift, H. S.: Observations on Exhaustion from the Effects (Coup de Soliel), New York J. Med. & Collateral Sc. **13**: 45, 1854.

body was first advocated by Darrach.[24] The first fully intelligent application of cold was probably made by Levick[25] in 1856. His patient had a temperature of 109 F., and recovered by using cold applications. Opiates have long been a favorite method of treatment of sunstroke. They were first recommended by Rush.[15] Ether and chloroform are favorites for convulsions. The immediate removal of the patient from the heat, loosening and removing tight clothes, and reducing body temperature by any means have sufficed in most cases. The importance of this treatment has been shown by the British army surgeons.[26] In a condition in which either the injury is acutely fatal or the imminent danger soon passed, it is not hard to understand why so many remedial measures have been used, and results claimed from their employment.

COMPLICATIONS AND SEQUELAE

In individuals that survive an attack of heat-stroke, it is not uncommon for symptoms to appear which indicate that, though life has been spared, some enduring mischief has been done. Immediately following the return of consciousness there may be speech disturbances, difficulty in swallowing, disorientation, hallucinations, delusions, paralysis or psychosis. In the patients who recover completely there may be severe diarrhea, apathy, loss of appetite, headaches and hyperirritability of the muscles for several days following the attack. In those once affected by heat there is frequently a subsequent hypersusceptibility. During convalescence there is an increased susceptibility to all sorts of infections. Reid's[27] studies show that pneumonia occurs in 10.07 per cent of cases. In general the sequelae may be divided into those referable to the muscles or to the peripheral nervous system. In referring to the frequency of infections during recovery from heat injuries, H. C. Wood[28] agreed with Weir Mitchell that chronic meningitis is the most common sequela.

Recently an ex-soldier came under observation for treatment of vague gastric complaints and constipation. He was a white man, aged 47, who, fifteen years ago, had an attack of heat-stroke while in the army on duty on the Mexican border. The attack came on suddenly with a loss of consciousness, which lasted several hours. After regaining consciousness, he slowly recovered. Neurologic examination, when we first saw him, revealed absent knee-jerks, dilated pupils which did not react to light, and swaying in the Romberg position. Repeated serologic examinations for syphilis, before and after provocative arsphenamine, and examinations of the spinal fluid failed to show evidence of syphilis. The cell counts and chemical examinations of the spinal fluid were negative. The patient stated that, since he had sunstroke, he had been susceptible to heat, and had had frequent headaches and visual disturbances. He had also been unable to stand with the eyes closed.

Messiter[29] observed hemiplegia in a boy of 4 years, the day following sunstroke. According to this observer, Surgeon General Maclean (of England) stated that he never saw hemiplegia follow sunstroke. Goebel[30] observed the absence of sweat and a positive Romberg as sequelae. Many different intra-ocular lesions have been described. Hotz[31] noted optic neuritis, neuroretinitis and detachment of the retina. Dercum[32] reports instances of cord and peripheral nerve lesions. Space will not permit of further enumeration of the sequelae of heat injuries.

SUMMARY

1. A study of the heat injuries as they have occurred in the United States Navy since 1861 shows that there have been thirty-eight deaths and forty-three invalided from the service.

2. This study appears to indicate that the incidence of heat injuries is greater in those born and reared in the northern section of the country than it is in those from the South.

3. There have been observations on heat injuries from biblical times up to the experimental era. Claude Bernard's investigations on the raising of body temperatures of birds and mammals by the application of artificial heat marks the beginning of this era.

24. Darrach, B.: Cases of Exhaustion from Heat Treated in the New York Hospital by Stimulants and Ice to the Entire Surface of the Body, Am. J. M. Sc. **37**: 55-57 (Feb.) 1858; New York J. Med. **12**: 45, 1854.
25. Levick, J. J.: Remarks on Sunstroke, Am. J. M. Sc. **36**: 404, 1848; **37**: 40-55, 1859.
26. Wilcox, W. H.: The Nature, Prevention and Treatment of Heat Hyperpyrexia, Brit. M. J. **1**: 392-397 (March 20) 1920.
27. Reid, W. D.: Pneumonia Not a Rare Complication of Heat Prostration, Boston M. & S. J. **67**: 217, 1912.
28. Wood, H. C.: Sunstroke—Chronic Meningitis, Boston M. & S. J. **111**: 505-508, 1884.
29. Messiter, A. F.: A Case of Insolation Accompanied by Hemiplegia, Lancet **1**: 1741, 1897.
30. Goebel, A. J. L.: Ueber die Nachkrankheiten des Hitzschlages, Berlin, O. Francke, 1905.
31. Hotz, P. C.: Intra-Ocular Lesions Produced by Sunstroke, Am. J. M. Sc. **78**: 105, 1879.
32. Dercum, F. X.: Two Presenting Sunstroke Sequelae of Unusual Character, Univ. M. Mag., Philadelphia, **3**: 160-163, 1890-1891.

TREATMENT OF NEUROSYPHILIS BY MALARIA

REPORT ON THE THREE YEARS' OBSERVATION OF THE FIRST ONE HUNDRED PATIENTS TREATED *

PAUL A. O'LEARY, M.D.
ROCHESTER, MINN.

The first and second years' observations on the results of the treatment of neurosyphilis by means of malaria were given in two previous reports.[1] I now report the status of the original 100 patients treated by this method, and also call attention to other features noted in the observation of 113 patients treated subsequently.

The treatment by malaria in the Mayo Clinic has been used particularly in the resistant parenchymatous forms of neurosyphilis, including the persistent and incapacitating gastric crises, "lightning" pains in the legs, and the optic atrophy of tabes dorsalis. Enthusiasm has not as yet carried us to the point of applying the treatment to patients with the acute signs of syphilis or the latent form of the disease. Neither have the proved standard methods of treating neurosyphilis by the use of arsphenamine, tryparsamide, intraspinal medication, mercury or bismuth, and sodium iodide intravenously been discarded because, according to Stokes and Shaffer,[2] the majority of our patients with the early manifestations of neurosyphilis respond favorably to one or other of the modifications of these established systems. To the remaining small number of patients who do not derive satisfactory clinical or serologic

* From the Section on Dermatology and Syphilology, Mayo Clinic.

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1. O'Leary, P. A.; Goeckerman, W. H., and Parker, S. T.: Treatment of Neurosyphilis by Malaria: A Preliminary Report, Arch. Dermat. & Syph. **13**: 301-318 (March) 1926. Treatment of Neurosyphilis by Malaria: Further Observations, ibid. **14**: 550-559 (Nov.) 1926.
2. Stokes, J. H., and Shaffer, L. W.: Results Secured by Standard Methods of Treatment in Neurosyphilis: Review of Four Hundred and Five Cases, J. A. M. A. **83**: 1826-1831 (Dec. 6) 1924.

results from these specific measures and to those who are admitted to my service showing the early clinical and laboratory signs of general paralysis, treatment by malaria is recommended because it has accomplished more for such patients than any previous combination of drugs or systems of therapy which I have tried.

There has not been any conclusive evidence advanced since the first report of Wagner von Jauregg [3] to explain the mechanism by which the results of malaria treatment are accomplished. Subsequently in this paper I shall compare the clinical results in the group in which the plasmodia were found in the blood stream without pyrexia with those in which the course was pyrexial.

I believe it is well to call attention again to the fact that the method is not without hazard; that the patient must remain for approximately a month in an institution organized to meet the emergencies that occasionally arise.

STATUS OF THE CASES OF GENERAL PARALYSIS PREVIOUSLY REPORTED

A review of the present status of the original 100 patients inoculated with *Plasmodium vivax*, of whom fifty-seven showed early signs of general paralysis, indicates that practically 50 per cent of the latter are now in complete remission and have been so for from eighteen months to three years, and that an additional 18 per cent are in partial remission or improved in one manner or another.

My conception of what constitutes complete remission in general paralysis is not based on serologic reversals or on the disappearance of the objective signs of the disease, but is estimated on the patient's economic status as a result of the treatment. If a laborer is paroled from an insane asylum and again becomes a wage-earner, or if a baggage master, after six months' enforced idleness, returns to his work and is promoted to tariff clerk, or if a physician who was forced to give up his practice now insures a satisfactory income by raising chickens, or if a lawyer following a malaria course has retained a successful office practice for the last twenty months, the results may be interpreted as remissions. On the other hand, if a railroad engineer was not permitted to drive an engine but supported his family by working as an engine hostler, or if a bank cashier now satisfactorily acts in the capacity of a bookkeeper at one-half his former salary, the results are interpreted as improvement or partial remission. Many of the patients have been re-examined by the neurologists at approximately six-month intervals to determine whether there has been any regression in the neurologic objective data. The results have been negligible on the whole and of no significance in defining the degree of improvement. If the time arrives when the term cure rather than remission is used, the assessment of the disappearance of the neurologic signs will be warranted.

SEROLOGIC DATA

The longer the observation period, the greater the number of serologic reversals noted. Clinical improvement is not always paralleled by serologic improvement, although practically all the patients who have been benefited clinically have also shown a decrease in the intensity of the Wassermann or Kolmer reaction and a decrease in the number of lymphocytes in the spinal fluid. Of the twenty-eight cases of general paralysis in which complete remission was established, the serologic reactions of the spinal fluid and blood were completely reversed to negative in nine. The reversal to normal of the reactions of the blood and spinal fluid was, however, unaccompanied by clinical betterment in a few instances. In one case which was in remission for two years and in which the serologic tests had remained completely negative for eighteen months, death occurred unexpectedly during a paretic convulsion. Although I do not believe that the serologic data alone warrant prognostic deductions, I have been impressed with the absence of any serologic relapse in the entire series. This is significant in view of the fact that cases of parenchymatous neurosyphilis are prone to manifest persistently positive serologic reactions, and especially a tendency toward frequent relapses in the state of the spinal fluid.

The second most significant observation in the study of the serologic evidence has been the prognostic value of the colloidal benzoin test. Particularly following treatment, I have been loath to attach much significance to one or two such reactions, believing it necessary to have at least three typical zone reports before attaching any prognostic significance to them. This applies to the colloidal gold test as well as to benzoin. In this group it is striking how frequently a paretic type of curve was reduced to a tabetic type and remained so if remission followed. In several instances such change has preceded the clinical improvement. It is difficult to explain why this reversal is so much more pronounced in these cases than in cases of the same type of syphilis in which standard methods were followed in treatment. Marked reduction in the pleocytosis was frequently noted at the end of the fever course. On one occasion a drop from 189 to six small lymphocytes in the spinal fluid was recorded two days after the last paroxysm. Moreover, the disappearance of large lymphocytes and the occasional polymorphonuclear leukocyte from the spinal fluid was often noted at the end of the fever course.

CLINICAL RELAPSE

There have been two patients in this group who have relapsed clinically. Complete remission had lasted for twenty-four and eight months, respectively, following the malaria course, and both patients were prompted by their apparent well being to refuse further antisyphilitic treatment. Repeated attempts at reinoculation were unsuccessful following the relapse. In another case (already referred to) which was in partial remission, during eighteen months of which the tests of blood and spinal fluid had been repeatedly negative, death occurred suddenly during a paretic convulsion. In a small group in which partial remission following the fever course permitted a return to the original occupation, there has been slow, almost insidious, mental deterioration. The home physicians of two of these patients compared their regression to that of senility. It is worthy of note, also, that some of the patients whom we classified in the unimproved group, who previous to the malaria course had been irritable, troublesome and of great concern to their families, have remained docile, absent-minded and ambitionless following the course of fever. It is possible that this course of events is the result of the injury that syphilis has produced in the brain tissue and that treatment by malaria has held in abeyance, for the present, further degeneration.

3. Wagner von Jauregg, Julius: Ueber die Einwirkung fieberhafter Erkrankungen auf Psychosen, Jahrb. f. Psychiat. **7**: 94-131, 1887; Ueber die Behandlung der progressiven Paralyse, Wien. med. Wchnschr. **54**: 2124-2127, 1909; Ueber die Einwirkung der Malaria auf die progressive Paralyse, Psychiat.-neurol. Wchnschr. **20**: 132, 1918; **20**: 251, 1919. M. Ikhtemann (Contribution à la question de la priorité du Dr. Rosenblum dans la nouvelle méthode du traitement de la paralyse générale, Ann. d. mal. vén. **20**: 561-565 [Aug.] 1925) claims the priority of malaria therapy for Rosenblum.

REINOCULATION AND IMMUNITY

In those cases in which a satisfactory fever course was not followed by clinical improvement, reinoculation failed to produce a second course with one exception. In this case five pyrexial attacks in a second course were followed by spontaneous abortion of the malaria. In our experience with inoculation of malaria, it is not unusual to find patients who are immune to the plasmodia at the time of inoculation, and others who acquire this immunity after a few or several pyrexial bouts. This has been noted particularly in patients who give a reliable history of previous malarial fever. There have been seven cases in which it was impossible to produce chills and fever by repeated inoculations, and it was not possible to recover the plasmodia in the blood stream following inoculation with various strains of the organism that were producing successful takes in other patients. These seven patients are undoubtedly immune to the disease.

The group in which spontaneous abortion of the malaria has followed from six to fourteen chills has been particularly studied for therapeutic effects. Of these twenty-two cases the plasmodia were retained in the blood in ten, although the course was afebrile; in the remainder the organism was not recovered. In this group of aborted malaria, the best therapeutic effect followed the greatest number of chills; after six or less pyrexial attacks practically no benefit was derived from the inoculation, while those in which more than six occurred showed varying degrees of benefit. The presence of plasmodia in the blood for many days after the chills stopped spontaneously did not increase the degree of benefit. This confirms my previously recorded impression that the therapeutic benefits from malaria treatment are more dependent on the fever than the presence of the plasmodia. The fact that other fever-producing substances have been less effective therapeutically than the malaria suggests that there is still some unexplained mechanism involved. The evidence of Weichbrodt and Jahnel,[4] and more recently Schamberg and Rule,[5] has demonstrated the influence of fever in cases of experimental syphilis.

In the cases in which chills and fever spontaneously disappeared while the plasmodia were still retained in the blood stream, the use of foreign protein substances has been successful in reestablishing the bouts of fever. The intramuscular injection of whole milk, typhoid vaccine or plasmodia-free whole blood, or the intravenous injection of 2 or 3 cc. of malarial blood will invariably provoke the chills and fever within twenty-four hours. When the plasmodia were not demonstrable, this method has been of no avail.

In six cases the chills were stopped because of severe toxemia, convulsions or toxic hepatitis early in the course of the fever. In two of these, in which there were nine and eight pyrexial bouts, respectively, there was slight improvement, while in the remainder neither benefit nor appreciable ill effect occurred.

It would appear from a study of this group, and indeed of the entire series of cases, that the point which I mentioned in my first report is still tenable; namely, that the greater percentage of remissions was noted in the cases in which bouts of fever were higher and more prolonged.

4. Weichbrodt, R., and Jahnel, F.: Einfluss hoher Körpertemperaturen auf die Spirochäten und Krankheitsercheinungen der Syphilis im Tiereexperiment, Deutsche med. Wchnschr. **45**: 483-484 (May 1) 1919.

5. Schamberg, J. F., and Rule, Anna M.: Studies of the Therapeutic Effect of Fever in Experimental Rabbit Syphilis: the Thermal Death Point of Spirochaeta Pallida, Arch. Dermat. & Syph. **14**: 243-255 (Sept.) 1926.

THE NONPARETIC GROUP

Of the thirteen cases in which the disease was classed as asymptomatic paresis, or paresis sine paresi, benefit has been shown in six by gain in weight, increase in strength and ambition, and general improvement. Of these the reaction of the blood and spinal fluid was completely reversed to negative in four, and in the remaining two the factors in the spinal fluid became negative, except the Kolmer reaction, which remained weakly positive. It is to be noted that the patients who showed the most satisfactory clinical and serologic results received intensive antisyphilitic treatment following the malaria.

In uncomplicated cases of tabes dorsalis the results have not been better than in those treated by the routine measures, and I do not feel justified in these cases in adding the additional risk of malaria treatment. However, in those serologically negative cases of tabes, with persistent lightning pains or gastric crises, in which continued use of arsphenamine, mercury and iodides has offered little relief, such treatment has brought about more improvement than has been accomplished heretofore. Of three cases in which intensive antisyphilitic treatment had been previously given for gastric crises without material improvement, the crises are practically relieved in two, after almost three years of observation. Similarly, of two cases in which the serologic data were negative and lightning pains were persistent, almost complete relief has been accomplished in one, while in the second but slight amelioration of the pains has been noted. In these two groups inoculation was carried out late in the first year of the fever treatment, but since then inoculations of malaria have been used in three additional cases manifesting persistent pains in the legs, and in eight of those manifesting gastric crises; although the percentage of improvement is not as high, because of the larger series, the results definitely warrant the continuation of the method in these groups.

Of the seven cases of simple optic atrophy, only slight decrease in vision has occurred in three, in comparison with that noted previous to the course of fever, while in four loss of vision was progressive. In practically all the cases of this group there has been a decrease in vision toward the latter part of the fever course, which has progressed further during the administration of quinine. In only one of this group was there a suspicion that the vision decreased as a direct result of the malaria.

Of the six cases of asymptomatic neurosyphilis, definite serologic reversal has been found in one, while in the remaining five no material change has been observed as yet. There were six borderline types with taboparalysis, in all of which clinical improvement was manifested, but without any serologic changes of note. Of the original 100 patients treated, there have been six whom we have not had the opportunity of examining during the last year.

In only five of the original cases in which malaria was induced was syphilitic aortitis evident because, early in the treatment, I purposely avoided inoculation in cases of cardiovascular disease complicating neurosyphilis. However, in all of the six cases in which necropsy was performed after the malaria course, definite syphilitic aortitis was found. During the past year there has been one case with aortitis and aortic regurgitation in which it was necessary to stop the malaria because of myocardial failure, but in the remaining twelve patients inoculated progression in the cardiac

symptoms was not noted. Further observation is necessary to determine whether treatment by malaria has a beneficial effect on cardiovascular syphilis.

COMPLICATIONS

The complications that have developed during the course of fever have become less troublesome with continued experience. The blood urea is a valuable indication of the degree of toxemia of the inoculation malaria. I have likewise found tests of hepatic function of considerable help in estimating the severity of the postmalarial jaundice, a not uncommon complication in the more recent series. Three types of hepatic disease have been demonstrated thus far in the entire series. In three patients, syphilitic hepatitis, previously unrecognized, was aggravated by the treatment by malaria, but responded readily to mercury and iodides. Toxic hepatitis, probably of malarial origin, has been the most common type noted and has responded quite satisfactorily to the measures recommended by Wilhelm [6] for the treatment of postarsphenamine jaundice. Hepatic cirrhosis has been observed in one case. As previously mentioned, on one occasion evidence of myocardial failure developed toward the end of the course in a case in which there was aortitis and aortic regurgitation. Herpes simplex and labialis are quite common during the febrile course, and herpes ophthalmicus has resulted in serious sequelae lasting for nine months after the paroxysms. As would be expected in the treatment of general paralysis, all the mental complications from complete negativism to marked delirium may be encountered during the febrile stage. As the result of adhering to the seven-week course of quinine, there was only one recurrence of the malaria in the 213 patients treated.

MORTALITY

The mortality in cases treated by malaria, as reported by various observers, has offered a weighty weapon for the opponents of this form of treatment. Of the first 100 patients treated by this method nine are dead, a rate which compares favorably with that in any group of untreated cases of parenchymatous neurosyphilis observed for three years. Analysis of the causes of death shows that in two cases it was probably directly due to the malaria. In three others, the malaria undoubtedly acted as the predisposing factor, as the direct causes were bronchopneumonia, diphtheria and erysipelas. These infections were acquired shortly after the malaria was stopped or during the last few days of the fever course when the patients were debilitated and exhausted. In two cases death was caused by general paralytic convulsions many months after the fever course; in these I believe the malaria had no influence. In the eighth case death was due to suicide, and in the ninth to infectious meningitis a year after the malaria course. So there have been actually only five cases in which death was influenced by the malaria, a surprisingly low figure if the severity of the fever course and the debility of the patient are considered. In the second group of 113 patients treated there have been five deaths; in two of these the malaria was a predisposing cause, while accidents accounted for two more, and suicide for the fifth.

Necropsy was performed in six of the nine fatal cases. Acute splenitis and long-standing aortitis have been demonstrated in all the cases, but in none was death in any way attributable to the aortic lesion. Microscopic study of the brains has not been carried out in detail, but will afford material for a separate study. The reports of Gerstmann,[7] Sträussler and Koskinas [8] and, more recently, that of Freeman, indicate that the clinical results from treatment by malaria in general paralysis are attributable to organization in the meninges and around the blood vessels by means of deposits of fibrous tissue. Particularly significant has been the absence of *Spirochaeta pallida* in the brains studied. These reports are most encouraging, and Freeman [9] prophesies that we may eventually be warranted in talking of the cure of general paralysis following the treatment. Until more evidence has been accumulated to support this impression, I believe we must be satisfied in estimating the results in terms of arrest or remission because, even though there has been a demonstrable pathologic change in the meninges and about the blood vessels following the treatment, the fibrosis which takes place will result in a group of symptoms which may eventually be recognized as the residue of parenchymatous neurosyphilis. The use of such terms as "arrested" or "burned out" and "paroled general paralytic" will be justifiable in this group until sufficient time has elapsed and further pathologic studies have shown that the cure of neurosyphilis is possible. The value of the use of the malaria treatment early in the course of neurosyphilis is again emphasized by these pathologic studies.

TABLE 1.—*Results in First Twenty-Four Cases of General Paralysis (First Group Reported)* *

Status of Patient	1924 Cases	1924 Per Cent	1925 Cases	1925 Per Cent	1926 Cases	1926 Per Cent
Remission	6	25	9	38	12	50
Improvement	9	38	9	38	2	8
No change	3	13	2	8	2	8
Death during year	2	..	1	..	1	..
Unknown	4	..	1	..	3	..
Clinical relapse	..	..	..	..	1	..

* Observation has now extended from two to three years.

POSTMALARIA TREATMENT

The postmalaria antisyphilitic treatment is an adjunct. The most pronounced remissions and serologic reversals have been observed in those cases in which the most systematic and intensive treatment was carried out after the course of malaria. However, pronounced remissions and serologic reversals have been encountered in some cases in which only the fever course was undertaken. As might be expected, in the cases in which intraspinal measures were used in conjunction with arsphenamine intravenously, mercuric succinimide intramuscularly and sodium iodide intravenously, there were more serologic reversals than in those in which only tryparsamide and bismuth were administered. There is, however, little choice between these two systems of treatment, and the selection has been dependent on the patient's age and general condition, and the clinical result of the malaria four months after the fever course.

Four different strains of *Plasmodium vivax* have been available for use, and the third strain has passed through 525 different hosts that I have record of. This has been due to the successful transfer of the strain to seven different hospitals in the Northwest. Successful inocula-

6. Wilhelm, L. F. X.: Duodenal Lavage in the Treatment of Jaundice Complicating the Treatment of Syphilis, Arch. Dermat. & Syph. **10**: 499-506 (Oct.) 1924.

7. Gerstmann, Josef: Die Malariabehandlung der progressive Paralyse, Vienna, J. Springer, 1925.

8. Sträussler, E., and Koskinas, G.: Weitere Untersuchungen über den Einfluss der Malariabehandlung der progressiven Paralyse auf den histopathologischen Prozess, Ztschr. f. d. ges. Neurol. u. Psychiat. **97**: 176-191, 1925.

9. Freeman, Walter: Malaria Treatment of General Paralysis: Histopathologic Observations in Fifteen Cases, J. A. M. A. **88**: 1064-1068 (April 2) 1927.

tion was carried out in these institutions seventy-two hours after the blood was withdrawn, by the use of a solution containing 5 per cent sodium citrate and 0.2 cc. of 50 per cent dextrose solution, into which 20 cc. of defibrinated (by agitation) malarial blood was injected. The blood was transported in vacuum bottles kept at body temperature.

There has not been any material change in the virulence of the organisms by passage through these numerous hosts. On two occasions, after the malaria in three or four cases in succession had aborted, it seemed as though the organism was losing its potency; but when it again developed its former virulence in subsequent inoculations, it was inferred that the organism was not at fault but rather that the resistance of the patient to the plasmodium was sufficiently high to prevent the chills and fever.

SUMMARY

In a series of 100 patients with various manifestations of neurosyphilis who were inoculated with *Plasmodium vivax* between June, 1924, and February, 1926, there were fifty-seven cases of general paralysis, of which twenty-eight (49 per cent) are still in remission as measured by the economic status of the patients. Of the thirteen patients presenting the syndrome of paresis sine paresi or asymptomatic general paralysis, six have been materially improved, and the factors in the blood and spinal fluid have been reversed to normal in four. The evidence still supports the assertion that in the serologically negative cases of tabes with persistent lightning pains or gastric crises, malaria inoculation is beneficial if the general condition of the patient will permit him to tolerate it. Likewise, in the group with optic atrophy benefit has accrued: in four of the nine cases in which this treatment was carried out, the loss of vision has been apparently arrested.

The method of treatment is not without risk, as evidenced by a mortality of 5 per cent, only those cases in which the malaria was a factor being considered. For parenchymatous neurosyphilis in debilitated and senile patients, tryparsamide is still to be preferred.

The clinical results have been more pronounced when the fever treatment was instituted early in the course of the general paralysis before much degeneration had taken place, but striking results have been noted in cases in which the clinical signs of general paralysis were present four years before the inoculation. The duration of the syphilis has not been a factor in the end-results.

The recent reports of the study of the brain in cases of general paralysis in which death followed a malaria course indicate that healing and deposition of fibrous tissue have actually taken place in the meninges and around the blood vessels. Such data suggest the possibility of some day speaking of the cure of general paralysis, but experience with this disease must be supplemented by many more years of observation of the pathologic as well as the clinical results before such insinuations are warranted.

The longer the periods of observation, the greater the number of cases in which the condition of the spinal fluid and blood is completely reversed to normal. It must be borne in mind, however, that the serologic changes are not always paralleled by clinical improvement. This is confirmed by the observation of cases in complete remission in which no serologic changes are manifested; on the other hand, a case with complete change in all the factors in the spinal fluid and the blood may be suddenly terminated by death from general paralysis. In my experience the changes in the colloidal benzoin and colloidal gold tests are of more prognostic significance following treatment by malaria than they have been in other forms of treating neurosyphilis. The change from a first to a second zone type of curve and eventually to a flat or negative curve has, on numerous occasions, preceded clinical improvement.

Experience with the fever treatment of Wagner von Jauregg during the last three years in 213 cases in my service, and in sixty-five additional cases in a neighboring hospital with which we cooperated, has definitely proved that it is the most valuable method of treatment suggested for paretic parenchymatous neurosyphilis, notwithstanding the fact that it is attended with definite risk. I have demonstrated to my own satisfaction that antisyphilitic treatment is an essential adjunct after the course of malaria.

TABLE 2.—*Results of More Than One Year's Treatment in Fifty-Seven Cases of General Paralysis (Second Group Reported)*

Status of Patient	1925		1926	
	Cases	Per Cent	Cases	Per Cent
Remission	22	39	28	49
Improvement	9	16	10	18
No change	15	26	6	11
Death during year	7	..	1	..
Unknown	4	..	4	..
Clinical relapse	..	..	2	..

ABSTRACT OF DISCUSSION

DR. HAROLD N. COLE, Cleveland: We have now been using this malarial therapy for something like two years and have treated about 200 cases. Although we wish to be conservative, we are enthusiastic about the results of the treatment. There are practically no patients who have not shown some benefit, many of them being of the type that does not respond to other types of treatment. We are now using this therapeutic measure in cerebrospinal syphilis, in cases that have been resistant to other methods. The fact that a public accountant who has not been able to add up a column of figures and who, within six months after this treatment, is able to take up his former occupation would certainly make one think there is something in the treatment. Many of the patients now show negative laboratory results. This may not occur shortly after the course, perhaps not for a year, but it is surprising then to find that everything is negative in the way of blood and spinal fluid tests. I should like to subscribe to Dr. O'Leary's remarks regarding the addition of foreign protein to stir up the activity of the fever after it has sort of died out. This can be done with great success. We have used this treatment in the control of cases of tabes dorsalis with crises; and as a result I have recently seen two severe cases in which there has not been trouble with these crises for a year. We have not seen much result in the cases of optic atrophy and naturally would not expect to see any when the damage has already been done. We have not attempted to give any second courses of malarial therapy as yet. If this work is done by some one who has followed quite a lot of these cases I think it is not a dangerous procedure. If he has not had much experience there will be many disagreeable things. If the blood pressure comes down to 90 it is time to do something. In all these cases we use caffeine sodiobenzoate. If the patient does not respond well to this we stop the treatment. Usually this will bring the pressure up again and we shall be able to finish the treatment. Like Dr. O'Leary, our best results have been obtained in patients who have had from fourteen to eighteen chills. We have found that blood urea estimation is of value, but the blood pressure gives a better indication. The urea is rarely high without other signs; for instance, diarrhea and severe exhaustion and persistent vomiting. Incident to such experiences we have had good results with sodium bicar-

bonate. During the chill we take the temperature every twenty minutes to get the top. Otherwise this will be missed in many instances. There has been but one death in the last 100 cases and we think this is due to the fact that we have had more experience with the treatment. I think that in working with cerebrospinal syphilis and other types the prognosis is good, or not so bad as in some of the older risks.

DR. UDO J. WILE, Ann Arbor, Mich.: We have used the same form of treatment in a much smaller number of cases. In the group studied, about forty cases, we have not yet seen any untoward symptoms. No patient has as yet died. In the group treated we must have another type of general paralysis than that seen elsewhere, or else the cases were of a much later type than those seen and treated in other clinics. We have seen remissions occur in exactly 10 per cent of the cases. In only three instances have we seen the patient improved to the extent that he has been able to resume his occupation. In those three cases, as well as in the others, we have not been able to see any change in the spinal fluid reaction. In analyzing this result I think it compares favorably with the remission under no treatment at all. With regard to finding spirochetes in the brain, the striking piece of work Dr. O'Leary mentioned is remarkable. In this connection, Foerster of Greifswald found in puncture of the brain live spirochetes in two cases treated with malaria, so the results are apparently not uniform. We did find one thing that was very convincing, regarding malaria and spirochetes. A young woman with multiple chancres was given the malarial therapy solely to find out whether there was any effect on the spirochete outside the spinal system. Within a short time all the spirochetes disappeared from those lesions, and the lesions involuted much more rapidly than they otherwise would have. I am greatly pleased with the results Dr. O'Leary and Dr. Cole have reported, for I have been on the point of giving up the treatment because I could not see that my results were in accord with others. I will now continue the work and see whether later results will not be more in accord with theirs.

DR. WATSON W. ELDRIDGE, Jr., Washington, D. C.: St. Elizabeth's Hospital in this city, where my work is carried out, was the first place in this country to undertake the malarial treatment of general paralysis. I inoculated the first patient in December, 1922, and we have treated approximately 275 cases since. It is apparent, therefore, that some of our cases were treated more than five years ago. A recent survey of our work showed that remissions had occurred in 61 per cent of the cases that had been treated for two years or longer. The percentage of complete remissions is not so high, only about 40 or less. I think we have been very conservative in our survey and I believe that an institution such as St. Elizabeth's is apt to be more conservative than the average clinic, in considering general paralysis. The serum determinations in 85 per cent of the cases have shown marked improvement and in a surprisingly large number have returned to normal. The improvement in the serum does not commence until about a year after the treatment and from then on becomes progressively more rapid, so that the greater the elapsed time since treatment, the greater the improvement. Does Dr. O'Leary transmit the malaria from one general paralytic patient to another? If not, how does he transmit it and keep his malaria active? I should also like to know whether, in the group in which the malaria failed to take, reinoculations were successful. I have had several inoculation failures, principally among colored males. In these cases inoculations repeated many times failed to take.

DR. J. E. MOORE, Baltimore: We have been using this treatment for three years and our results closely parallel those reported by the other speakers. There are many points of interest that cannot be brought out in a discussion of a few minutes, but there are one or two I should like to stress. Regarding incomplete remission, we have come to feel that this is a result poorer than no remission at all, or death. We have had several instances in which the patient has made a complete physical recovery from a rapidly advancing general paralysis, but has remained stationary or become worse mentally. Two or three such patients have shown no signs of dying in two or three years, and from the standpoint of the patient and his family this result is much more tragic than death. The possibility of such an outcome should be explained to the patient's family before treatment is undertaken. In the second place, we feel that in an ambulatory clinic malaria treatment is more or less a last resort from the economic standpoint. We have other methods of treatment available which enable us to get a fair percentage of complete remissions, especially in early general paralysis. In a small group of early general paralytic patients treated with tryparsamide we have obtained 57 per cent of adequate remissions. We have not been able to duplicate this result with malaria, chiefly because we have utilized this form of treatment for patients with more advanced general paralysis. It is difficult to ask a working man to give up the time necessary for treatment with malaria, when we can get good results by other means. I would emphasize the point regarding the serologic reactions. In most patients the spinal fluid does not begin to improve for at least a year after the inoculation. This seems to raise the question as to whether high temperatures are entirely responsible for the beneficial effects of the treatment. As has been said, many patients become serologically negative after one, two or more years. Was reinoculation done to produce a second attack, and if so, at what interval after the first? Will Dr. O'Leary tell us his experience with malarial treatment in optic atrophy and patients with eighth nerve deafness?

DR. PAUL A. O'LEARY, Rochester, Minn.: In reading the summary, I failed to call attention to the fact that as a rule our patients with uncomplicated tabes dorsalis have not done well on malarial therapy, and we have not felt it worth the additional risk to place them on fever treatment. The patients with gastric crises and severe lightning pains have had a very decided lessening in the frequency of the pains and crises in practically 40 per cent in both groups. We have treated fifteen cases of primary optic atrophy, three of which have been materially benefited, in that they have shown no progression in the optic atrophy since the malarial course. I have had no experience with patients who had eighth nerve deafness. I think Dr. Eldridge answered Dr. Wile's point, in that it must be emphasized again and again that the longer the observation periods are carried out the more striking the clinical results become. Wagner von Jauregg called attention to this in his original communications, and it has been confirmed in our experience. Our patients have not been hospitalized general paralytics. We have, at Rochester, a state hospital for the insane, which is also using this method, and with its cooperation we have been able to maintain *Plasmodium vivax*. The second strain of the organism used in my service has now passed through 525 hosts that I know of. This has been accomplished by transferring it to various syphilologists in the Northwest. We have transported the malarial blood to Portland, Ore., and to Los Angeles, and successfully produced malaria. Inoculations have been made eighty hours after withdrawal of the blood from the host. We have reinoculated as many as six times those patients who have not developed chills and fever and have not been successful in obtaining a "take." We have also reinoculated patients who did not show improvement following the first fever course and have not been able to produce a second course of chills and fever. We have reinoculated as long as fourteen months after the first fever course but were not able to produce malaria. I have also noted that a patient with the agitated type of general paralysis may become a dull, morose individual following a malaria course and is certainly less care to his family than before the fever course. This kind of result is interpreted as a slight improvement, and I believe that the results of this type are not a contraindication to the method.

The Mind as Well as the Body Must Be Engaged.—Even bodily development is most successfuly achieved when the deeper forces are at work. The doctors have long recognized that healthful exercise is not simply a matter of muscular contraction. There must be an object, there must be interest, there must be exhilaration: to produce the best results the mind as well as the body must be engaged.—Lee: Play in Education, pp. 45-46.

FRACTURE OF THE XIPHOID PROCESS CAUSING CLONIC SPASM OF THE DIAPHRAGM *

CLARENCE E. BIRD, M.D.
Resident Surgeon, Peter Bent Brigham Hospital
BOSTON

To observe clonic diaphragmatic spasm is in itself sufficiently surprising, but to find as its probable underlying cause a fracture of the xiphoid process is still more so. Comparatively few instances of spasm of the diaphragm are found recorded, and, so far as can be determined, fracture of the xiphoid process is unique.

REPORT OF CASE

H. S., a married Russian-Jewish tailor, aged 48, was admitted, Oct. 10, 1921, with complaints which led to the diagnosis of duodenal ulcer. Roentgen-ray studies confirmed the impression and, October 13, under ether anesthesia, a transsection of the pyloric antrum with posterior gastro-enterostomy (Billroth II) was performed. The ulcer was situated on the anterior and superior surfaces of the duodenum, involving the cap along the lesser curvature. Because of the extensive surrounding induration and cicatrization, it was not removed. An appendix, noted by the pathologist to show "obliterative appendicitis," was excised, and the abdominal wound was closed in layers with chromic catgut, a small rubber tissue drain being left in the region of the duodenal stump.

The recovery from ether was stormy, with vomiting and raising of mucus, which accumulated in the pharynx. Between the third and sixth days after operation there were signs of infarction or pneumonia at the right base, and these observations were confirmed by a roentgenogram of the chest.

Recovery from this complication was prompt and the patient was discharged on the nineteenth day after operation, without complaints. The wound was noted to be solidly healed.

Two years later the patient came to the outdoor department in answer to a follow-up letter. In spite of failure to adhere to a gastric five-meal regimen, he had been well until the previous two months, during which time he had had mild epigastric pain one-half hour after meals. No note was made as to whether this pain was similar to his previous ulcer distress.

On examination a moderately large hernia of the wound was found, and in the upper portion of it was felt an indurated mass thought to be a deep stitch surrounded by fibrous tissue. The patient was advised to enter the hospital for repair of the hernia.

This he failed to do, and was next seen in July, 1926, three years later. Because of new symptoms which had arisen, he was now quite willing to undergo a second operation. For two years, at intervals of from two weeks to a month, he had had attacks of sharp pain, starting in the midline between the xiphoid process and the umbilicus, and "shooting" to right and left along the costal margins toward the flanks. Each attack lasted over a period of from fifteen to thirty minutes. During this time he would lie down and compress his abdomen with his hands, partially relieving the distress. So far as he could tell, the attacks had no relation to his meals or to any other event, coming on at any time of the day but never waking him up at night.

Two weeks before admission the pain became more persistent, and for the first time was accompanied by a "shaking" of the abdomen. This "shaking" he involuntarily demonstrated to us from time to time.

Without obvious cause and without preparatory inspiration or other warning, and even while in the midst of a sentence, he would be suddenly interrupted by a series of from five to eight quick, moderately violent generalized protrusions of the abdomen. These spasms occurred within the time of one or two seconds, at a much faster rate than the heart's beat. I cannot be sure as to the relation to respiration, but I am under the impression that there was a cessation during this interval. At any rate there was no glottic spasm and no sound whatever.

There were several large and small defects in the linea alba between the umbilicus and xiphoid process through which the abdominal contents protruded on straining or coughing. In the upper portion of the wide scar could be felt a nodule which was the shape of the xiphoid, and which moved inward and upward as if hinged on the sternum. Once considered, this could be nothing other than a fractured ensiform cartilage, connected to the sternum only by fibrous tissue.

The patient had himself noted, and we were able repeatedly to observe, that manipulation of the wound in general would often bring on the clonic spasm. But still more striking was the almost unfailing production of the contraction by pushing the xiphoid inward and upward, by "pushing the button," so to speak.

Fluoroscopic studies of the diaphragm were, much to my chagrin, not made, and the patient, being in excellent general health, was operated on the morning after admission. At this time, the fractured xiphoid process was removed and the hernia repaired. In removing the xiphoid I attempted to demonstrate a direct anatomic connection with the diaphragm. Muscle fibers were not observed to be attached to the posterior surface of the process, but the diaphragm, seen and felt from within the peritoneal cavity, curved down, as usual, to the level of the upper portion of the ensiform cartilage to insert along the costal margin.

Coughing, retching and vomiting occurred as after the first operation, but there was no pulmonary complication, and he was discharged on the twentieth day after operation with a firmly healed wound in which there was no suggestion of a fascial defect. He had had no recurrence of spasm and no noteworthy pain. Gastro-intestinal roentgen-ray studies before discharge showed a gastro-enterostomy, functioning well. There was no evidence of a gastric or gastrojejunal ulcer. The duodenum was not visualized.

Since his discharge five months ago, I have seen this patient repeatedly. He occasionally takes a little sodium bicarbonate after eating to help raise gas from his stomach, but he has no more than slight discomfort and does not have the spasm of the diaphragm.

COMMENT

The fracturing of the xiphoid process in this case I am inclined to ascribe to the zeal of a junior assistant, who was probably holding a retractor at the original operation. The probability of this mode of fracture is at least strong, and serves as a warning against undue retraction against the ensiform cartilage. This fracture is, of course, most likely to occur when the fundus of the stomach or the region of the dome of the diaphragm is exposed through an upper midline incision.

Most of the reports of diaphragmatic spasm are found in Italian medical journals, though accounts in the English, French and German languages are to be singled out. The veterinarians have long been familiar with the disorder (first account in 1770).[1] They have described one case in an ox,[2] one case in a greyhound [3] and many instances in horses.[4]

The spasm may apparently be caused by irritation of the respiratory or phrenic center, by stimulation of either phrenic nerve anywhere along its course, or by direct stimulation of the muscle of the diaphragm.

A definite etiology has not been found for most of the cases reported, many being classified as "hysterical." [5] The probability that psychic stimulation may occur is strengthened by consideration of an itinerant who for years went the rounds of the German clinics

* From the Surgical Clinic of Dr. Harvey Cushing.

1. Garsault, cited by Nunn (Footnote 4).
2. Bach, cited by Nunn.
3. Gamgee, cited by Nunn.
4. Nunn, J. A.: Spasm of the Diaphragm, Vet. Record **15**: 434-437 (Jan. 10) 1903. Taylor, H.: A Case of Spasm of the Diaphragm, Vet. Record **15**: 464, 1903.
5. Bersani, I.: Tic clonico del diaframma, Policlinico (sez. prat.) **28**: 1576-1578 (Nov. 21) 1921.

exhibiting his ability to distort the lower thorax and abdomen.[6] This he did by controlled action of the thoracic, diaphragmatic and abdominal muscles.

Cases have definitely followed encephalitis and influenza,[7] occurring with and without glottic spasm. In encephalitis and influenza, as well as in tics due to hyperexcitability (tetany, toxic nephritis[8]), the stimulus to diaphragmatic spasm may be central, in the phrenic nerve itself, or peripheral. In the so-called epidemic transitory diaphragmatic spasm,[9] a direct infection of the diaphragmatic muscle is probable.

A most striking example of phrenic nerve irritation was seen in a girl, aged 16, in whom a diaphragmatic spasm, without closure of the glottis, was initiated with each inspiration, the expanding left lung compressing the phrenic nerve against a cervical rib.[10] The rib was removed, with complete cessation of the spasm. In our own hospital records is an account of a man, aged 63, who had recurring attacks of hiccups (diaphragmatic, thoracic [?] and glottic spasm)[11] over a period of years, following a severe brachial plexus injury of the left side, with extensive deep fibrosis of the cervical tissues.

In several instances one or the other phrenic nerve has been involved in an abscess, tuberculoma[12] or tumor of the mediastinum, while in others the spasm has been unilateral and synchronous with the heart beat,[13] suggesting direct irritation of the left phrenic nerve or the pericardial portion of the left diaphragm. In these cases the transmission of an action current from the cardiac muscle to the left phrenic nerve has been suggested.[14]

But direct irritation of the diaphragm is comparatively infrequent as a cause of diaphragmatic spasm. Examples of irritation by a gastric ulcer[15] (irritating the peritoneum over, or perforating into, the diaphragm), of rupture of the stomach (in horses), and of hemorrhage into the muscle of the diaphragm[16] (noted in a postmortem examination of a horse who had had diaphragmatic spasm) are on record. Spasm caused by the irritation of a fractured xiphoid process is, in all likelihood, similarly due to muscle, or nerve ending, stimulation.

721 Huntington Avenue.

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9. Payne, G. C., and Armstrong, Charles: Epidemic Transient Diaphragmatic Spasm: a Disease of Unknown Etiology: Epidemic in Virginia, J. A. M. A. **81**: 746 748 (Sept. 1) 1923.

10. Hunt, G. B.: Clonic Spasm of the Diaphragm Associated with a Cervical Rib, Brit. M. J. **2**: 314, 1909.

11. Glottic spasm may or may not occur with diaphragmatic spasm. It is probably protective, and entirely reflex, preventing the too rapid inrush of air, mucus and foreign bodies into the lungs.

12. Bianchi, Giovani: Un case di spasmo clonico unilaterale del diaframma, Gazz. d. osp. **43**: 595-597, 1922. (Refers to Gatté and Broca, and to Sbrocchi.)

13. Dematheis, F.: Emicrampo clonico-ritmico del diaframma, Gior. d. osp. Maria Vittoria **15**: 296-304, 1915.

14. Perussia (footnote 8). It is interesting to note that Risien Russell (An Experimental Investigation of the Cervical and Thoracic Nerve Roots in Relation to the Subject of Wry-Neck, Brain **20**: 45, 1897) showed, in monkeys, that stimulation of the fourth anterior cervical root caused contraction of the portion of the diaphragm near the central tendon on the side stimulated, while stimulation of the sixth root contracted the portion near the periphery, and of the fifth root, the portion between the two on the same side. Stimulation of the vagus nerve had no direct effect on the diaphragm. Schlaepfer (The Phrenic as the Nerve of Motor Innervation of the Diaphragm, Bull. Johns Hopkins Hosp. **34**: 195-197 [June] 1923), furthermore, demonstrated, both in laboratory animals and in man, that the phrenic nerve is the sole motor nerve of the diaphragm, and that its stimulation does not cause any of the accessory muscles of respiration, such as those of the thorax, to contract.

15. Lardemois, G., and Braine, J.: Phreno-spasme chronique lie à un ulcus gastrique juxta-cardiaque, etc., Bull. et mém. Soc. de chir. de Paris **48**: 937-941, 1923.

16. Brun, cited by Nunn (footnote 4).

LENS PROTEIN AND ITS FRACTIONS

PREPARATION, AND IMMUNOLOGIC AND CHEMICAL PROPERTIES *

ALAN C. WOODS, M.D.
AND
EARL L. BURKY, M.S.
BALTIMORE

Our purpose is to report our experiments in the preparation of serologically pure fractional antigens of the crystalline lens, and our observations on the chemical and immunologic properties of these fractions.

This study was undertaken as the necessary forerunner of a proposed study of the possible rôle lens protein may play in lenticular disease. Before reporting our observations, the problem would be made somewhat clearer by a brief historical review.

In 1894, Morner [1] isolated from beef lens two crystalline fractions, which he called "lens alpha" and "lens beta," and an insoluble substance which he termed "albuminoid." In 1910 and again in 1922, Jess [2] reported his studies on the quantitative relationship of the alpha and beta crystallin at different ages, and in the normal and pathologic lens, noting the fact that in old age and in cataractous lenses the amount of the alpha fraction was decreased. In 1903, Uhlenhuth [3] reported his classic discovery concerning the immunologic properties of lens protein as a whole. Uhlenhuth's observation was that the protein of the lens differed immunologically from other protein bodies; that it was organ specific, and that it greatly lacked species specificity. The question arose as to whether the alpha and beta crystallins differed in their immunologic reactions, and this question has been studied, especially by Hektoen and Schulhof,[4] in the John McCormick Institute for Infectious Diseases.

Hektoen showed that the alpha and beta crystallins of the bovine lens were precipitogenically distinct. Also in practically all cases he found that in each of his preparations of alpha and beta the antigens were not serologically pure, owing to a small amount of the fellow crystallin. In only one instance did he procure serologically pure antialpha and antibeta serums.

As early as 1904 the observations of Uhlenhuth concerning the possibility of a relationship between lens protein and lenticular disease excited interest among clinicians and investigators. In 1902, A. E. Davis began working on this problem, publishing his first paper [5] on this subject in 1922. As a result of Davis' clinical observations, he is convinced that immunization with a preparation of the bovine lens has a definite effect on retarding the development of lenticular opacities. The same subject was investigated experimentally by Paul Römer. Römer's investigations extended from 1905

* From the Wilmer Ophthalmological Institute, Johns Hopkins Hospital.

* Read before the Section on Ophthalmology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 18, 1927.

1. Morner, C. T.: Untersuchung der Proteinsubstanzen in den leichbrechenden Median Auges: I, Ztschr. f. physiol. Chem. **18**: 61, 1894.

2. Jess, A.: Die moderne Eiweisschemie im Dienste der Starforschung, Arch. f. Ophth. **109**: 463, 1922.

3. Uhlenhuth, P.: Zur Lehre von der Unterscheidung verschiedener Eiweissarten mit Hilfe spezifischer Sera, Festschrift zum sechsigsten Geburtstage von Robert Koch, Jena, 1903, p. 49.

4. Hektoen, Ludvig; and Schulhof, Kamil: Lens Precipitins, J. Infect. Dis. **34**: 433 (May) 1924. Hektoen, Ludvig: The Specific Precipitin Reaction of the Normal and Cataractous Lens, J. Infect. Dis. **31**: 72 (July) 1922.

5. Davis, A. E.: Serum and Lens Antigen Extract Treatment for the Prevention and Cure of Cataract, Tr. Am. Ophth. Soc. **22**: 112, 1922.

to 1914, and, while inconclusive, excited much controversy. In brief, Römer proceeded on the theory that the senile cataract was the result of some cytotoxin acting on the lens. His investigations [6] covered a wide field: (1) the effect of lens protein on the blood of various animals; (2) the action of lipoid and various poisons on the lens; (3) the permeability of the lens capsule to toxins; (4) a serologic study of patients with cataract, and (5) the effect produced by specific organotherapy with lens protein.

Experiments by Lazarew [7] and other investigators failed to show a relationship between lens protein and the formation of cataract, but there are certain points in Römer's work that cannot be ignored. Römer and Gebb were able to demonstrate, in the blood serum of a young diabetic patient with cataracts, antibodies specific for lens protein. They further showed that the lens capsules were permeable to cytotoxic substances, and that the cells of the lens were capable of uniting with substances for which they had specific receptors. Although Römer could not substantiate his hypothesis by experimental research, he was apparently convinced that the formation of cataract was due to a reaction taking place between the blood serum of the patient and the protein of the lens. General as is this statement, it is not to be lightly dismissed, for the brilliant experiments of Guyer and Smith [8] have recently reopened this entire question. Guyer and Smith, although not primarily interested in the immunologic reactions of lens protein, took advantage of the fact that in embryonic life the lens is surrounded by the tunica vasculosa and is therefore more subject to influences from blood serum than would occur later in life. These observers immunized fowls to rabbit lens protein, producing anti-rabbit lens serum. This serum was then injected back into pregnant rabbits at intervals of two or three days over a period of two weeks. There was a high mortality among these rabbits and the embryos; but among the sixty-one young surviving, nine showed ocular defects centered chiefly around the crystalline lens; imperfect development, or liquefaction of the lens; partial or complete cataract; or other ocular lesions which, in the opinion of these authors, were due primarily to the imperfect development of the lens.

STATEMENT OF THE PROBLEM

In view of the earlier observations of Uhlenhuth and Römer, the later observations of Davis, and the more recent startling experiments of Guyer and Smith, it seemed opportune to rework this entire field from the immunologic standpoint, in the hope that some observations might eventuate which would offer some rational clinical application. The enormous complexity of the problem has been briefly outlined by one of us.

Before any experimental or clinical studies were possible, it was necessary to obtain a reliable, stable preparation of the whole lens, and immunologically pure preparations of the lens fractions; and to determine if possible, the relationship, or serologic entity, of these fractions. This, accordingly, has been made the first problem in the proposed study.

EXPERIMENTAL WORK

In our first experiments we prepared the fractions of the crystalline lens in the manner used by Hektoen and Schulhof, and outlined by their predecessors. These preparations were made as follows: Bovine eyes were obtained from the slaughter house. They were opened by a section of the cornea, an incision was made in the capsule of the lens, and the lens was expelled. A number of these lenses, usually from twenty-four to thirty-six, in their wet, fresh state, were ground with sand until finally a smooth paste was obtained. Distilled water was added up to ten times the weight of the lenses. This was put in the shaking machine for two hours, and then allowed to stand over night; the next day, the mixture was given a slight swirl, and allowed to settle, and the supernatant turbid fluid was decanted. This was repeated until the mixture was free from sand. Sufficient sodium chloride was then added to make an isotonic solution (0.85 per cent), tricresol was added, and the mixture was allowed to stand at 37 C. for twenty-four hours. Aerobic and anaerobic cultures were then taken and if they were sterile, the mixture could be used in such concentration as was desired.

Such a preparation is turbid unless further filtered and is practically useless for precipitin tests. In order that the lens protein might be easily accessible at all times in more accurately quantitative form, a dehydrated mixture of the lens was prepared. This was done as follows: Pig or beef lenses, obtained as before, were crushed in their fresh state by being pressed between glass plates. The plates were pulled apart and the crushed lens material placed in a vacuum desiccator over calcium chloride with a measured vacuum equal to 700 millimeters of mercury. Rabbits' lenses, somewhat smaller, could be placed directly into the desiccator without danger of putrefaction; but with the larger lenses it was first necessary to crush them. When the dehydration was complete, the dried lenses were ground in a mortar; the resulting fine powder was returned to the desiccator for several days, and then stored in glass stoppered bottles. Such preparations as these, when a weighed sample is kept at from 90 to 100 C. for twenty-four hours, contain from 7 to 15 per cent moisture. Preparations of the whole lens could be made from this dry lens whenever desired. The strength of the various antigens was determined by dehydration to find out the total solid content (including salts), and by quantitative nitrogen determination to ascertain the protein content.

PREPARATION OF FRACTIONAL ANTIGENS

Alpha Antigens.—An aqueous extract of the whole lens is centrifugalized at a high speed for fifteen minutes, and the supernatant fluid decanted. The sediment represents the "albuminoid" fraction of Hektoen and Schulhof. Tenth-normal acetic acid is added to the supernatant filtered fluid until the maximum precipitate is obtained. The precipitate thus thrown down by the acetic acid is the alpha crystallin, while the supernatant fluid is chiefly the beta crystallin. The alpha precipitate is then dissolved by adding tenth-normal ammonium hydroxide and is again precipitated by the further addition of tenth-normal acetic acid. This procedure is repeated several times.

Beta Antigens.—The supernatant fluid, after the primary precipitation with tenth-normal acetic acid, is chiefly beta crystallins. This fluid is dialyzed in col-

6. Römer, P.: Die Pathogenese der Cataracta senilis vom Standpunkt der Serumforschung, parts 1 and 2, Arch. f. Ophth. **60**: 175, 1905; Stoffwechsel der Linse und Giftwirkungen auf desselbe, Ber. d. Ophth. Gesellsch. **33**: 39, 1906; Die Pathogenese der Cataracta senilis vom Standpunkt der Serumforschung, parts 3, 4, 5 and 6, Arch. f. Augenh. supp. **56**: 150, 1907; Specifische Therapie des beginnenden Alterstares, Ber. d. Ophth. Gesellsch. **35**: 195, 1908. Römer, P., and Gebb, H.: Untersuchungen über das biologische Verhalten des Blutserums zum Linseneiweiss bei Kataract, Arch. f. Augenh. **77**: 316, 1914.

7. Lazarew, E.: Origin of Senile Cataract (review), Arch. Ophth. **41**: 660, 1912.

8. Guyer, M. F., and Smith, E. A.: Studies on Cytolysins: II. Transmission of Induced Eye Defects, J. Exper. Zool. **31**: 171, 1920. Guyer, M. F.: The Production and Transmission of Certain Eye Defects, Tr. Internat. Cong. Ophth., Washington, 1922, p. 669. Davis, F. A.: Hereditary Eye Defects in Rabbits Experimentally Induced, Tr. Ophth. Soc. U. K. **45**: 555.

lodion sacks until the p_H of the surrounding tap water is reached. Tenth-normal acetic acid is again added to the solution, the remaining alpha precipitated, and the supernatant beta fraction again dialyzed. This procedure is repeated several times. These antigens were then properly injected into rabbits, and immune serums were thus obtained to a number of different preparations of this whole antigen and fractional antigens. These serums were examined against the various antigens in the precipitin test.

TECHNIC OF THE PRECIPITIN TEST

The antigens are diluted in physiologic sodium chloride solution to the different desired dilutions, usually from 1:100 to 1:100,000. The serums are usually undiluted. Occasionally, for exact determinations, they are diluted 1:2, 1:4, 1:8, 1:16 and 1:32. Tubes 8 mm. in diameter are used, and 0.15 cc. of antigen is added to the tube. The serum, of greater specific gravity, is allowed to run down the side of the tube slowly until it layers itself cleanly beneath the antigen. Fifteen-hundredths cubic centimenter of the serum is used. The tubes are kept at room temperature for one hour, when they are read as either positive, doubtful or negative, by the ring test. They are then shaken, kept one hour at room temperature, and read on a four plus scale, visible precipitins being used as the standard. They are kept overnight in the icebox, and again in the morning read on the same scale. Only a negative reaction was recorded, when the last icebox reading was clear.

All serums were kept in the icebox, either in a sterile condition or preserved by chloroform. All antigens were sterilized by passage through Berkefeld filters; their sterility was proved by culture, and they were then kept under sterile conditions in the icebox without preservatives.

All animals were bled before immunization was commenced, the serums that proved negative to lens antigens were used thereafter as negative controls.

RESULTS OBTAINED WITH HEKTOEN-SCHULHOF PREPARATION

Our results obtained with the antiserums produced by the injection into rabbits of the antigens perpared by the method outlined by Hektoen and Schulhof confirm almost exactly the results reported by these authors in their second report. While there was every reason to believe that the alpha and beta antigens are precipitogenically distinct, nevertheless a certain amount of cross precipitation was obtained.

TABLE 1.—*Whole Lens Antiserum with Whole Lens and Fractional Antigens*

Antiserum	Antigens	Results
Whole Beef Lens (34.1)	Whole Beef Lens	Positive 1:100,000
Whole Beef (34.1)	Alpha A. 1	Positive 1:100,000
Whole Beef (34.1)	Beta B. 2	Positive 1:12,000

Rabbits immunized to whole lens reacted with antigens of whole lens in dilutions of more than 1:100,000. The same whole lens antiserum reacted with alpha antigens in the same concentration. It reacted with the beta antigens in a concentration of 1:12,000. The results are shown in table 1.

Alpha antiserum reacted with specific alpha antigen in dilutions up to 1:100,000 (on the basis of total solids). These alpha antiserums, however, reacted definitely with beta antigens; in much the same manner they reacted with alpha antigens. Table 2 shows the reaction obtained with these typical antialpha serums.

Beta immune serums obtained by beta antigens prepared by this method show a precipitin reaction with beta antigen as high as 1:16,000 (on the basis of total solids) and do not show any reaction to any alpha antigens even after twenty-four hours' incubation. Table 3 shows the reaction of the typical beta antiserum.

TABLE 2.—*Reactions of Alpha Antiserum*

	Antigens												
	Alpha Crystallin (A 16.11)						Beta Crystallin (B 12.0)						
Serum Alpha (6364.2)	2,000	4,000	8,000	16,000	30,000	60,000	100,000	2,000	4,000	8,000	16,000	30,000	60,000	100,000	NaCl
Undiluted	4	4	2	2	2	1	1	2	2	2	1	1	1	1	—
1:2	4	4	3	2	2	1	1	2	2	2	1	1	1	1	—
1:4	4	4	3	2	2	1	1	1	1	1	±	±	—	—	—
1:8	3	4	3	2	1	1	1	±	±	—	—	±	—	—	—
1:16	2	2	2	2	1	1	1	±	—	—	—	—	—	—	—
1:32	1	1	1	1	1	1	1	—	—	—	—	—	—	—	—
Normal* serum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Serum of rabbit used to produce antiserum, taken before immunization.

From the results of these titrations it appears that all antigens are immunologically active, and that the beta antigen, probably, is serologically pure.

A large number of alpha antigens were prepared according to the method outlined by Hektoen and Schulhof, and repeatedly purified by precipitation. Yet it was impossible to produce by this method any alpha serum which did not react definitely with beta antigens. An alpha antiserum with the greatest relative purity was then taken and absorbed with an excess of beta antigens over a period of twenty-hours. There resulted the complete removal of all antibodies to beta antigens, while the precipitin reaction of this absorbed serum to the alpha antigens was unimpaired. This indicated that the impurities lay in the alpha antigens, for had the alpha antiserum-beta antigen reaction been due to any alpha impurity in the beta antigen, the absorption of alpha serum with the beta antigens would have resulted in the impairment of the alpha antigen-alpha antiserum reaction, which was not the case.

TABLE 3.—*Reactions of Beta Antiserum*

	Antigens										
	Alpha Crystallin (A 16.11)					Beta Crystallin (B 12.0)					
Serum Beta (65.3)	2,000	4,000	8,000	16,000	32,000	2,000	4,000	8,000	16,000	32,000	NaCl
Undiluted	—	—	—	—	—	4	4	2	2	1	—
1:2	—	—	—	—	—	4	4	2	2	2	—
1:4	—	—	—	—	—	3	3	2	2	2	—
1:8	—	—	—	—	—	2	2	2	—	—	—
1:16	—	—	—	—	—	±	—	—	—	—	—
1:32	—	—	—	—	—	—	—	—	—	—	—
Normal* serum	—	—	—	—	—	—	—	—	—	—	—

* Serum of rabbit used to produce antiserum, taken before immunization.

It was quite evident, therefore, that in order to prepare reliable, serologically pure alpha and beta antigens, further investigation was necessary. The Hektoen-Schulhof method yielded antigens which definitely indicated that precipitin distinction existed between these two antigens; yet an alpha antigen could not be prepared by this method in a serologically pure condition.

IDENTITY OF THE ALBUMINOID FRACTION

In the first part of the investigation, an emulsion was made of the "albuminoid" fraction and injected into rabbits. The antiserum thus obtained was immunologi-

cally indistinguishable from a routinely prepared alpha antiserum reacting strongly with alpha antigen, and less strongly with beta antigen.

Later in the investigations, the "albuminoid" residuum, after the removal of the alpha and beta fraction, was purified as follows and an antiserum obtained: Desiccated lens was used. A 3 per cent suspension in tenth-normal ammonium hydroxide and 0.5 per cent tricresol was shaken over night in the shaking machine with glass beads. The next morning it was placed in the refrigerator, where it remained for a day. The sediment was then collected by centrifugalization and washed with water for a period of seven days, until the supernatant fluid no longer contained protein by the ninhydrin test. The sediment, 30 cc. by volume, was suspended in 120 cc. of tenth-normal ammonium hydroxide, shaken five hours, and then placed in the refrigerator over night. It was centrifugalized fifteen minutes at high speed. The supernatant fluid was dialyzed in collodion over night. The dialyzate was again centrifugalized and the sediment discarded. Sodium chloride was added to make a concentration of 0.85 per cent and tricresol to 0.5 per cent. This was injected intravenously into rabbit A7B1 in four doses, the first one 5 cc. and the other three 10 cc., twice a week for two weeks. Three days after the last injection the rabbit was bled and serum A7B1 obtained. This antiserum A7B1 reacted with alpha antigens up to 1: 50,000 and did not give any reaction with beta antigens. In fact, it was by this devious route that we prepared our first serologically pure alpha antiserum.

For these reasons it appears to us that the "albuminoid" fraction is not a distinct serologic entity, but is definitely alpha crystallin, which is either enmeshed in the lens fibers and is so prevented from going into solution, or is an insoluble form of alpha antigen. We have not been able by any of numerous means to prepare a true solution of the "albuminoid" fraction.

In the light of these experiments, it appears impossible to expect serologically pure preparation of the lens fractions if the methods used by Hektoen and Schulhof are exactly followed. Further, the whole lens mixture prepared by the Hektoen-Schulhof method is difficult to use in the precipitin reaction, owing to the difficulty of passing it through a Berkefeld filter to obtain a water clear solution. Accordingly, we have tried a number of other methods of preparing whole lens protein and its fractions. For a long time our efforts were fruitless as regards the fractional antigens, the interaction between the alpha immune serum and the beta antigen persisting. We have finally succeeded, however, in obtaining preparations of alpha and beta antigens which appear to be serologically pure and which we have been able to reproduce with definite regularity. Our final methods of preparing whole lens protein and the alpha and beta fractions are as follows:

PREPARATION OF WHOLE LENS PROTEIN

A method of the preparation of the lens protein has been devised by Cecil, and has been adopted by the H. K. Mulford Company, which markets a 2 per cent solution of lens protein. This method of extraction is as follows: Fresh lens is treated with sodium chloride solution containing 0.5 per cent of sodium bicarbonate, in the proportion of 20 cc. to one lens. The lenses are crushed and as thorough an emulsion as possible is obtained; then 0.5 per cent phenol (carbolic acid) is added. This emulsion is kept in a refrigerator for forty-eight hours, and is then strained through gauze, and put through a Sharpless centrifuge twice. It is filtered twice through three thicknesses of coarse filter paper; then once through a Mandler filter with 5 pounds pressure and again with 11 pounds pressure. Finally it is passed twice through a Berkefeld filter, with 15 pounds pressure. There results a stable colloidal solution which has a distinct blue tinge.

In our earlier investigations, it was noticed that a weak solution of ammonium hydroxide was a better solvent for lens protein than was water. Accordingly, we devised the following method of preparing whole lens protein: Fresh lenses were treated with hundredth-normal ammonium hydroxide, shaken with glass beads in the shaking machine for about ten hours, and then placed in the refrigerator for forty-eight hours or more. Tricresol, 0.5 per cent, is added before the mixture is placed in the refrigerator. The material is then centrifugalized at high speed for one hour; the precipitate is discarded, and the supernatant fluid is filtered through coarse filter paper, three thicknesses, and then through Berkefeld filters for sterility. Aerobic and anaerobic cultures are made. If the cultures are negative, the resulting solution can then be used. The end-product is a clear lemon yellow fluid, the protein content of which is usually 1.5 per cent or less.

TABLE 4.—*Relative Protein Content, Percentage, and the Total Solid Content, in Various Antigens* *

Antigen	Preparation	Total Nitrogen	Non-protein Nitrogen	Protein Nitrogen	Protein Percentage	Dehydration Total Solids, per Cent
20.1	Cecil preparation from fresh lenses	424	21.6	402.4	2.39	3.02
20.2	Hundredth normal ammonium hydroxide fresh lens	316	24.6	291.4	1.73	1.99
20.3	Cecil preparation from dried lens	356	21.4	334.6	1.98	2.16
20.4	Hundredth normal ammonium hydroxide from dried lens	205	24.8	180.2	1.07	2.25
20.5	Hundredth normal ammonium hydroxide isotonic salt from dried lens	243	44.5	198.5	1.17	1.09
27.0	Ammonium hydroxide preparation from fresh lens prepared with alumina cream	349	25.5	323.5	1.91	2.15
	Mulford's commercial preparation	350	21.0	329.0	1.95	1.48

* Analyses made by Dr. W. F. Perlzwig, through the courtesy of Dr. Longcope, in the chemical laboratory of the medical clinic of the Johns Hopkins Hospital.

More recently we have used the following method of preparing whole lens protein:

The whole lens protein is treated with hundredth-normal ammonium hydroxide and an emulsion is made, which is put in a shaking machine over night. "Alumina cream" [9] is then added to 10 per cent of the total bulk. The mixture is allowed to stand over night. The supernatant fluid is then decanted. The sediment is removed by centrifugalization. The supernatant fluid is passed through a filter once, then through a Berkefeld B filter at 8 pounds pressure. There results a solution which appears to be comparable to the solution prepared by further filtration. This has the advantage of being extremely easy to prepare. We have prepared numerous specimens of these antigens by these different methods. Tests fail to show the presence of any aluminum salts.

To determine the relative values of these methods of preparation, we have extracted both the dry and the

9. Alumina cream is freshly precipitated aluminum hydroxide made by precipitating aluminum chloride by sodium hydroxide and washed until free of excess alkali.

fresh lens with these methods, keeping all other steps in the procedure identically the same throughout. The total nitrogen and nonprotein nitrogen of these antigens were then determined, and the protein percentage calculated. The total solids, which includes not only the protein but all salts, was also determined by dehydration. Table 4 shows the results of these analyses.

In obtaining the data recorded in table 4, the fresh lens preparation was made from twenty beef lenses with 400 cc. of solvent. The dried lens preparation was made for 12 Gm. of dried lens, which is roughly equivalent to twenty fresh lenses and 400 cc. of solvent. The percentage figures are reached by using the nitrogen factor for alpha and beta crystallin given by Hammersten, which is 5.94. The total solids are measured by dehydration. This dehydration process, of course, measures definitely all organic and inorganic salts as well as other constituents which are not included in protein percentage.

During the filtration of these lens antigens, it was noticed that the solution filtered more and more slowly, and that the end-product became more and more water clear as filtration proceeded. Accordingly, the different antigens were passed through new filters and the amount of the solution filtered before clogging took place was measured. It was found that 100 cc. of the antigen prepared by the Cecil method (with sodium chloride) passed through the filter before clogging occurred, but that all other solutions clogged the filter after 15 or 25 cc. had passed through. It also appeared that the absence of sodium chloride from the solution played an important rôle in the clogging of the filters, which seems quite natural when one remembers that sodium chloride inhibits to a certain degree the normal swelling of protein in the presence of alkali.

After the determination of the physical properties of these various preparations of antigens, we examined next their immunologic properties. Rabbits were accordingly immunized to a Cecil preparation of the antigens, supplied by the H. K. Mulford Company, and to an ammonium hydroxide extraction of the lens prepared by us; the exact protein percentages of both of these solutions were first determined, and the doses so arranged that the same amount of protein was received by the two series of rabbits. The only difference noticed between the antigens during the administration was that the ammonium hydroxide antigen had a somewhat corrosive action on the ear veins, while the Mulford preparation was much more readily tolerated by the rabbits. The rabbits were bled after the fifth injection, and both showed precipitins. At the end of the sixth injection, both showed strongly positive serums with homologous antigens. They were then bled from the heart, and the serums carefully examined in the precipitin test against the various antigens. A difference in the precipitin titers of the different serums was not noted. The serums were tested against the fractional antigens, and the results were most surprising. The reactions between the antiserum from ammonium hydroxide preparation and the alpha antigens was very much stronger than was the reaction between the antiserum produced by the Mulford preparation and the same antigens. On the other hand, the reactions between the antiserum produced by the Mulford preparation and the beta antigen was very much stronger than was the reaction between the antiserum produced by the ammonium hydroxide preparation and the beta antigen. From this observation, it seems quite definite that the ammonium hydroxide preparations contain a greater quantity of alpha crystallin (or act as a better alpha antigen) than does the Cecil preparation, whereas the Cecil preparation contains a greater quantity of beta crystallin (or acts as a better beta antigen) than does the ammonium hydroxide preparation. The results of this comparison are shown in table 5.

TABLE 5.—*Comparison of the Cecil and Ammonium Hydroxide Extractions*

	Antigens																										
	Mulford Lens Extract							A. B. × 17.15							Alpha Crystallin A 16.11							Beta Crystallin B 17.13						
Immune Serums	NaCl	1,000	2,000	4,000	8,000	16,000	32,000	64,000	1,000	2,000	4,000	8,000	16,000	32,000	64,000	1,000	2,000	4,000	8,000	16,000	32,000	64,000	1,000	2,000	4,000	8,000	16,000	32,000	64,000
N 1 B 4.3 Mulford antigen-undil....	—	4	4	4	4	3	3	1	4	4	4	3	3	2	1	1	1	1	1	—	—	—	4	4	4	4	3	2	1
1:2.....	—	3	3	3	3	2	2	1	3	3	3	3	3	2	1	±	±	1	1	—	—	—	2	3	3	3	3	2	1
1:4.....	—	2	3	3	3	3	2	1	—	1	1	1	1	1	—	—	—	±	±	—	—	—	1	1	1	1	1	1	1
1:8.....	—	—	±	1	1	1	1	1	—	—	1	1	1	1	—	—	—	—	—	—	—	—	1	1	1	1	1	1	1
1:16.....	—	—	—	—	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1:32.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
U 3 A 3.3 A. B. × 17.15 whole lens antigen-undil...	—	4	4	3	3	2	1	1	4	4	4	4	3	2	1	4	4	3	2	1	±	—	3	3	3	2	1	1	—
1:2.....	—	3	3	3	3	2	1	1	3	3	3	3	3	2	1	3	4	3	2	1	1	—	2	2	2	1	1	1	—
1:4.....	—	2	2	2	2	1	1	1	2	2	2	2	2	2	1	±	±	1	1	1	—	—	±	±	±	±	—	—	—
1:8.....	—	—	—	1	1	1	1	1	1	1	2	2	2	1	—	±	±	1	1	—	—	—	±	±	—	—	—	—	—
1:16.....	—	—	—	—	—	1	1	—	—	—	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1:32.....	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Normal serum pooled 3.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

THE PREPARATION OF SEROLOGICALLY PURE FRACTIONAL ANTIGENS

Attempts were made to separate the alpha and beta fractions by other methods, such as precipitation with ammonium sulphate, but without success. We returned finally to a modification of the Hektoen-Schulhof method, which in the main is the Wooldridge method for the separation of nucleoproteins. The modification we employed was the precipitation of the alpha and beta fractions at their iso-electric points. The iso-electric point of a protein is the point at which it is neither acid nor alkaline, and this is the point of minimum solubility. The iso-electric point will vary for different colloids and proteins. The iso-electric points of the alpha and beta fractions were determined as follows:

An ammonium hydroxide extraction of lens protein was prepared in the manner before described, and filtered to clarity; 20 cc. of this solution was then placed in each of a number of beakers. To each beaker was added an increasing number of drops of tenth-normal acetic acid. As the number of drops increased in the different beakers an increasing turbidity was noted, until at the addition of about six drops the maximum precipitate appeared to occur. The p_H of each beaker

was determined by using the La Motte 3-B outfit. (In making the determination it was necessary to fill the shells completely with the clear supernatant fluid.)

It was found that the maximum precipitate occurred at a p_H of from 5.2 to 4.8. Alpha antigens were now prepared by precipitations of whole lens protein at various hydrogen ion concentrations from p_H 6.0 to p_H 5.0. Alpha antiserums were prepared by injection into rabbits of those various alpha antigens. It was found that the maximum alpha antiserum-beta antigen reaction of these serums occurred in the alpha antiserums produced by alpha precipitated at p_H 6.0, but the reaction was still present in the alpha antiserum produced by alpha precipitated at p_H 5.0. The repetition of this experiment, and the examination of the antiserums produced by the injection of an alpha antigen precipitated at different p_H levels, finally showed that the iso-electric point of beta crystallin lay in the region of p_H 6.0 and of alpha crystallin from p_H 5.0 to p_H 4.8. Apparently the addition of tenth-normal acetic acid to the alkaline preparation of whole lens protein results in the precipitation of a small amount of beta in the neighborhood of p_H 6.0. As the p_H approaches 5.0, the precipitation of the alpha fraction becomes marked, while the precipitated beta tends to go back into solution. Further, after a p_H of 4.8 is reached, buffer action on the part of the precipitated alpha becomes evident, and over night the p_H will rise from 4.8 to 5.8. For this reason, when p_H 4.8 is first reached, a definite excess of acid can be added without further changing the p_H, and this step holds the p_H constant at 4.8. When acid is added beyond this point, however, carrying the p_H on the acid side beyond p_H 4.8, the turbidity of the solution grows less, the p_H now having passed beyond the iso-electric point of the alpha crystalline, which begins to go back into solution. We have availed ourselves of these observations to separate the alpha and beta fractions in a serologically pure state.

In practice, the method [10] is as follows:

The whole lens preparation is prepared as before described. Twenty cubic centimeters is placed in a number of tubes, and tenth-normal acetic acid is added until the maximum precipitate is obtained. The p_H of this tube is 4.8. Acid is further added until there is the faintest increase in turbidity of the supernatant fluid, indicating that the alpha is going back in solution. Thus the point is determined at which the maximum amount of acid possible may be added without redissolving alpha. The p_H is still 4.8 The quantity of acid to be added to the main bulk of whole lens protein is now calculated and added, the p_H again being checked. This should still be p_H 4.8. The mixture is allowed to stand over night. The precipitate is removed by centrifugalization. The supernatant fluid is practically pure beta crystallin, and the precipitate is alpha crystallin.

Further Purification of Alpha.—The precipitate is now dissolved in water, and tenth-normal ammonium hydroxide is added to a p_H 7.4. This is now dialyzed twenty-four hours to remove the excess ammonium hydroxide and is passed through a Berkefeld filter. Tenth-normal acetic acid is now added in the manner described before to a p_H 4.8; the alpha is again precipitated and removed by centrifugalization. This step is repeated until the supernatant fluid from centrifugalization gives a negative reaction to the ninhydrin test. Two more precipitations are now done. The final solution is sterilized by filtration. It is now cultured aerobically and anaerobically for seven days. After negative cultures, it is tested for serologic purity by precipitin tests against pure alpha and beta antiserum and by injection into rabbits, which should produce an alpha antiserum which does not react with beta antigen.

Further Purification of Beta Antigen.—The supernatant fluid from the first acetic acid precipitation is dialyzed in a collodion bag until the p_H of the surrounding tap water is reached. Twenty cubic centimeter samples are now placed in a series of tubes. Tenth-normal acetic acid (to precipitate any remaining alpha) is now added to these tubes in varying amounts to determine the maximum amount of acid which can be added without re-solution of any precipitate that may occur. This is again at about p_H 4.8. The total amount of acid necessary to add to the original bulk is calculated and added. The precipitate is removed by centrifugalization and discarded. Again the supernatant fluid is dialyzed, and this step is repeated until the addition of acid does not give a precipitate below p_H 5.6. The antigen is now tested against a pure alpha and beta antiserum. There should be no reaction to alpha and a good reaction to beta antiserum. The beta antigen thus produced contains only about 0.1 per cent protein by test. Accordingly, to facilitate immunization of animals, we have concentrated it as follows: The beta solution is saturated with sodium chloride and tenth-normal acetic acid is added to p_H 5.0. A heavy precipitate occurs (sodium chloride action on beta antigen—the sharpness of the iso-electric points being dependent on the absence of electrolytes). This precipitate is collected by centrifugalization at high speed for fifteen minutes, and the bulk of the precipitate measured. For each cubic centimeter of precipitate, 1 cc. of tenth-normal ammonium hydroxide is added, and as little water as is possible to manipulate. A slightly turbid solution results. This turbidity can be removed by centrifugalization; the excess of sodium chloride is removed by dialyzation, and the end-product sterilized by Berkefeld filtration. The resulting solution is beta crystallin in about 3 per cent concentration.

Table 6 illustrates the serologic purity of the fractional antigens thus produced.

TABLE 6.—*Serologic Purity of Fractional Antigens*

Antiserums	Antigen A 21.5	B 24
A 7 B 3.1 (antigen A 21.5).....	Positive 100,000	Negative
B 56.2 (B 15.11 antigen).....	Negative	Positive 50,000

ORGAN SPECIFICITY AND SPECIES SPECIFICITY

The fractional antigens produced by this method show the same properties of organ specificity and lack of species specificity first pointed out by Uhlenhuth as a property of whole lens protein.

The alpha and beta antiserums produced by the injection in rabbits of beef alpha and beta crystallins react respectively with the alpha and beta antigens prepared from swine lenses as well as with beef alpha and beta crystallins. This organ specificity of the alpha and beta crystallins is shown in table 7.

The antiserums produced by the injection in rabbits of beef alpha and beta crystallins do not react with other bovine tissue antigens. They have been tested both against beef blood serum antigen and against beef

10. The methods of preparation of iso-electric points, mentioned below, are for bovine lenses. Experimentation with the lenses of other species has shown that the iso-electric points of alpha and beta crystallins may vary in different species, but in other animals differential precipitation of the alpha and beta crystallins at their iso-electric points is possible.

aqueous antigen, and do not react. An antiserum produced by the injection of beef aqueous into a rabbit, on the other hand, reacts to both beef aqueous and beef serum, but not to any lens antigens, illustrating again the immunologic isolation in the normal eye of lens protein even from such neighboring fluids as the aqueous. Table 8 shows these reactions, illustrating the lack of species specificity of the crystalline lens, and of its fractions, alpha and beta crystallin.

TABLE 7.—*Organ Specificity of Alpha and Beta Antigens*

Serums	Antigens			
	Pig A 13.0	Beef A 16.11	Pig B	Beef B 15.11
Serum A 69.2 from pig antigen A 13.0	Positive 32,000	Positive 32,000	Negative	Negative
Serum A 72.3 from beef antigen A 16.11	Positive 32,000	Positive 64,000	Negative	Negative
Serum B 70.9 from pig antigen B 18.1	Negative	Negative	Positive 64,000	Positive 64,000
Serum B 56.2 from beef antigen B 15.11	Negative	Negative	Positive 64,000	Positive 64,000

COMMENT

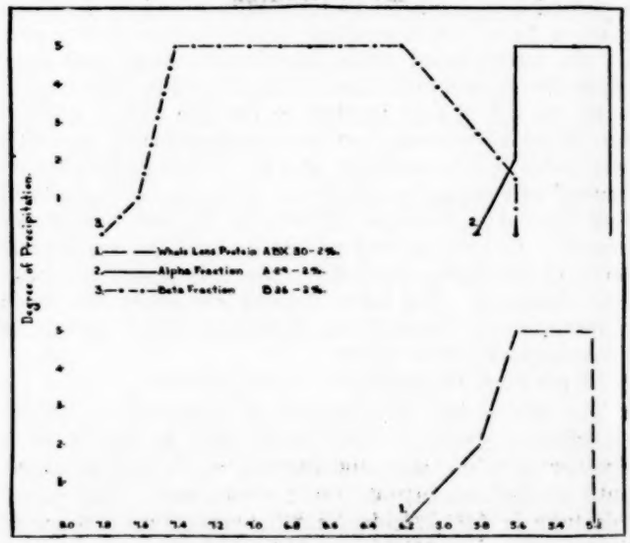
By the methods of preparing pure fractional antigens here outlined, pure fractional antigens have been obtained whose antiserums do not show cross precipitation when tested against heterologous fractional antigens which are relatively fresh. The alpha and beta antigens are, however, not equally stable. The alpha antigens have been preserved for many months, and the first pure antigens prepared are still stable and do not show evidence of precipitation. This is not the case with the pure beta antigen. Freshly prepared beta antigen produces a specific antiserum, which reacts strongly with the beta antigen and does not react with other antigens. Beta antigen, freshly prepared, shows no tendency to nonspecific precipitin reactions with heterologous antiserums, and does not give a precipitation with a hetero-immune serum even after twenty-four hours' incubation. After a period of a few weeks,

TABLE 8.—*Species Specificity of Crystalline Lens*

Antiserums	Antigens				
	Alpha Crystallin (A 16.11)	Beta Crystallin (B 17.11)	Whole Lens (ABX 17.7)	Beef Aqueous (4)	Beef Serum (1)
Alpha (72.3).....	Positive 30,000	Negative	Positive 30,000	Negative	Negative
Beta (74.3).....	Negative	Positive 30,000	Positive 30,000	Negative	Negative
Whole lens 8990.4...	Positive 30,000	Positive 30,000	Positive 30,000	Negative	Negative
Beef aqueous humor (52.4).....	Negative	Negative	Negative	Positive 1:32	Positive 1:10,000

however, the beta antigen becomes unstable, even when kept in the refrigerator. There develops a definite tendency to spontaneous precipitation as the antigen grows older. Likewise, after some weeks, the beta antigens begin to show nonspecific cross precipitation with other hetero-immune serums. However, if alpha antigen is mixed with the beta antigen, the beta antigen loses this tendency to spontaneous precipitation, the alpha fraction having apparently a protective colloid action against the spontaneous precipitation of the beta. The accompanying chart shows graphically this protective colloid action by alpha on the precipitation of beta. The pure isolated beta antigen has a definite tendency to precipitate spontaneously between p_H 7.8 and p_H 6.2. This is shown on the first curve of the upper figure, while the second curve of the upper figure shows the range of acid precipitation possible in the pure alpha crystallin. The lower curve shows the range of possible acid precipitation of whole lens protein, the mixture of alpha and beta protein, precipitation being possible only between p_H 6.2 and p_H 5.2. In a mixture of alpha and beta crystallins, the beta protein in the mixture does not show any tendency to spontaneous precipitation in the higher ranges from p_H 7.8 to p_H 6.2, where it does tend to precipitate when in a pure condition. Apparently the presence of the alpha antigen has an inhibitory effect on spontaneous precipitation on beta antigen between p_H 7.8 and p_H 6.2.

This tendency of beta crystallin to precipitate spontaneously is of great interest, as it offers quite a plausible hypothesis to explain the etiology of senile cataracts. Beta crystallin does not tend to precipitate from whole lens protein, the alpha fraction having, as before noted, an apparent protective colloid action that prevents the precipitation of beta. Jess has noted that in old age and in cataractous lenses the quantity of alpha in the lens protein is greatly decreased. It seems plausible to assume that these facts may in some way be related to the causation of senile cataracts. The gradual



Range of precipitation of whole lens protein and alpha and beta crystallins at different hydrogen ion concentrations.

decrease in the alpha fraction allows the beta fraction to become greater and relatively more pure, and further gradually removes a protective colloid action against spontaneous precipitation of beta crystallin. Thus a condition may be approached where beta crystallin predominates in the lens protein and the protective action of the alpha fraction, which normally prevents spontaneous precipitation of beta, is removed. Spontaneous precipitation of beta in vivo and in situ may now occur, with the resultant clouding of the lens. This is an especially interesting hypothesis when it is considered that the range of spontaneous precipitation of the beta fraction lies in the normal hydrogen ion concentration of the body fluids. Such a theory is, however, totally without experimental proof in vivo.

Lens protein contains both globulin and albumin. The question whether the albumin and globulin bear any relationship to the alpha and beta fractions naturally arises. No such relationship can be demonstrated. Globulin is present in ten times the amount by volume than is the albumin. Both the globulin and the albumin fractions react with antialpha and antibeta

serums, indicating the mutual presence of alpha and beta fractions in both the globulin and the albumin.

At present a statement cannot be advanced as to the relative merits of the Cecil commercial preparation and the ammonium hydroxide preparation we have devised. The chemical analyses show little difference in the nitrogen content, and immunologic tests in vitro indicate that the Cecil preparation contains a greater relative quantity of beta crystallin, while the ammonium hydroxide contains a relatively greater amount of alpha fraction. Should further study show that anything is to be gained by a relatively greater quantity of either the alpha or beta fraction, one or the other methods of preparation of whole lens may then become preferable. A study of clinical hypersensitivity to lens protein is now in progress. The few observations already at hand indicate that a marked difference may exist in the skin reactions produced by these two preparations.

SUMMARY

A study of the preparation, and immunologic and chemical properties of whole lens protein, and its alpha and beta crystallin fractions, has been undertaken. New methods for the preparation of whole lens protein have been devised. These new preparations contain a larger relative amount of alpha crystallin and less beta crystallin than did the older preparations. It was found impossible to produce serologically pure fractional antigens by the methods outlined by other investigators. A method of preparing serologically pure alpha and beta antigens was then devised by which such pure antigens can be prepared with definite regularity. The basic point in this method is the utilization of the iso-electric points of the alpha and beta crystallins.

Study of these serologically pure fractional antigens shows that they are organ specific and not species specific, thus supporting Uhlenhuth's observations.

The pure beta crystallin fraction shows a tendency to spontaneous precipitation within the normal hydrogen ion range of body fluids. The presence of alpha crystallin prevents this spontaneous precipitation. This observation, coupled with the earlier observations of other investigators, makes possible an attractive hypothesis concerning the etiology of senile cataract.

ABSTRACT OF DISCUSSION

DR. ZENAS H. ELLIS, New York: The study of the nutrition of the crystalline lens is most difficult. But it is only through such thorough-going research as Dr. Woods has done in studying the chemistry and immunology of the constituents of lens protein that we can hope to make progress in endeavoring to find the cause of the formation of lens opacities. Dr. Woods has given us a positive method of obtaining pure alpha and beta lens antigen and has shown that, like lens protein itself, they are organ specific. Jess has shown that during the growth of the lens all through life there is a slow shifting of the quantitative proportions of the albumins. The two crystallines (water soluble) are the main proteins, albumin being present only in traces. In old age there is an increase in albuminoids. Jess also has shown that in cataractous lenses the quantitative proportions of the soluble albumin and albuminoids are greatly changed and that the lenses decrease in weight because of an enormous loss of fluid and a considerable loss of albumin. The loss of albumin is at the expense of the crystallines, while albuminoids showed a definite increase. This leads one to believe that the crystallines change over into albuminoids. Dr. A. E. Davis at the International Congress of Ophthalmology in 1922 and at the American Ophthalmological Society in 1924 reported that he had arrived at a cataract preventive or cure without resort to surgery. Ninety-three per cent of the cataracts had responded favorably to his treatment. Working with the preparation introduced by Dr. A. E. Davis, we could not confirm his results, for no absorption of lens opacities was shown in any of our cases.

DR. S. R. GIFFORD, Omaha: This section owes Dr. Woods and Dr. Burkey a great deal of thanks for the unbelievable amount of work they have done in perfecting a method of preparing a pure lens antigen that can be preserved. Some work that we have been doing this year with another lens preparation compared to some work that we did a few years ago shows the immense importance of having a pure and standard lens antigen containing whole lens protein. One thing that ought to be borne in mind is that none of the work which has been done on the lens protein as a diagnostic agent or as a therapeutic agent has, to my mind, received sufficient scientific proof so that it can be accepted. I was glad to hear Dr. Ellis report a series of cases in which he had tried out the lens treatment and recorded accurate results. It must be remembered that this is all on an experimental basis and not to be treated otherwise until we know more about it.

DR. A. E. DAVIS, New York: The lens antigen that I first brought out was called by Dr. Woods the Cecil antigen and the Mulford antigen, whereas the Cecil antigen and the Mulford antigen are exactly the same; in fact, it was my own invention. At first I used this remedy in a suspension, but, of course, that could not go to the general public. Dr. Cecil and I then devised this method of making it sterile, and by the way, being a sodium chloride preparation, it went through the filter very well indeed. In making the comparison of the original antigen and the ammonium hydroxide antigen, the protein element in the original antigen is considerably higher than in the other, and I think for that reason, having that additional amount of protein, it would be more efficacious in the treatment. The original antigen also is much less irritating locally to the patient than the newer preparation. This is another point that I am sorry Dr. Woods did not carry out in his paper. Of course it takes time for all these experiments. The point I refer to is the precipitin titer. In my original cases, for the first fifteen cases that I reported, we bled all these patients and took this precipitin test. However, the tests were not very satisfactory. I am in favor of using the whole protein of the crystalline lens; that is, not using the fractional elements of the protein separately. Dr. Woods has shown that the alpha fraction holds the beta fraction in solution so it does not precipitate; and this is a great advantage indeed. With Dr. Ellis, I am of the opinion that if we make further studies of the nutrition of the lens, if we can find that specific affinity which they claim that the receptors of the individual lens cells have for nutrition (and Dr. Wheeler and Dr. Kirby have started on that line), then, if in addition we can get an antigen that is stable and sterile, we shall come nearer to solving the problems of the nonoperative treatment of cataract. While my own results are not quite so good, after being under observation for longer periods of time when the first reports were made, they show from 70 to 80 per cent of the cases arrested completely, and about 50 per cent of the cases show improvement in vision.

DR. I. S. TASSMAN, Philadelphia: It was my original purpose to speak of the work of some of the earlier investigations into this subject, by way of stressing the importance of the changes taking place in the soluble crystalline of the lens, during cataract formation. Dr. Ellis has gone over the later work of Jess. About 1910 the cystein reaction was described, by which the proteins, in the presence of certain cystein groups, produced a red color by the addition of a few drops of a 4 per cent solution of sodium nitroprusside and ammonia. W. Reiss, in 1911, and a little later Jess, demonstrated the regular occurrence of this reaction in normal human and animal lenses. Jess then showed that the reaction was produced by the alpha and to a greater extent by the beta crystallins, and that the reaction was negative in senile cataract, the degree depending on the extent of the cataract formation. Then when it was found that there was a decrease of the total proteins of the lens in cataract, solely through the two crystallins, it appeared that the absence of this cystein reaction in senile cataract depended on the loss of the cystein-containing fractions. There is no doubt about the presence of the reaction as demonstrated by the positive red coloring produced in nor-

mal lens with the addition of the 4 per cent sodium nitroprusside and ammonia, and its total absence in a hypermature senile cataract. The importance attached to the changes in the alpha and beta crystallin taking place during senile cataract appears to be supported by the work of Dr. Woods, when he showed how the beta crystallin, in particular, was affected in his experiments.

DR. ALAN C. WOODS, Baltimore: I shall first answer Dr. Davis' comments. The Mulford Company was the source of our information that Cecil was the deviser of the present antigen made by them, and it was for that reason that I referred to the "Cecil" antigen. It was not until Dr. Davis called my attention to it by letter that I was aware he had suggested this method to Dr. Cecil. As Dr. Davis stated, the Mulford antigen has a slightly higher protein content. The protein content of the ammonium hydroxide preparation can be increased by decreasing the amount of solvent used. We used this proportion arbitrarily because it gave us roughly a preparation similar to the Mulford preparation. The objection to the Mulford preparation is that it seems to give false positives in skin hypersensitivity tests, whereas my own antigen gave negative reactions. In these patients skin tests with beef serum and beef aqueous were positive. It looks as though by skin tests which are more sensitive than the precipitin test in vitro there may be some species specific impurity in the Mulford antigen. For that reason, I have been using the ammonium hydroxide antigen. What Dr. Davis said about the irritability is quite true, but in this paper I specifically omitted saying anything about the use of lens protein in clinical patients. I referred simply to the ear vein in a rabbit. In the skin of a patient there seems to be no difference in the amount of irritation; in fact, the ammonium hydroxide may be less irritating. Both of them are irritating, however. Dr. Davis spoke of the absence of precipitins in man. I would not expect precipitins in the blood serum of a 150-pound man from an injection of a few cubic centimeters of 1 per cent protein. I should not expect to get antibody reaction in a man unless much larger doses were used. As far as the antibody reaction produced by the fractions goes, there is a radical difference. The antibody reaction to alpha crystallin is rapid and prompt, and to beta crystallin is slow and uncertain. If (and I say advisedly *if*) the immunologic energies of lens protein have anything to do with cataract, I should be much more suspicious of the beta fraction than of the alpha fraction, because the alpha fraction seems a bit more nonspecies specific than the beta. Dr. Tassman spoke of the balance of these two proteins in the lens, which is one of the most interesting things we have encountered. The interactions of alpha and beta are remarkable. For instance, alpha is precipitated by acid, beta is not. But if an excess of electrolytes is added to the solution of beta, it will be precipitated by acid. Alpha from whole lens protein can be precipitated by the use of sodium chloride, and thus very little beta can be precipitated. But if sodium chloride is added to a pure alpha solution, alpha is not precipitated. I do not know why. Very slight differences in the calcium concentration of the solutions cause most remarkable precipitations. If calcium is added slightly over the normal physiologic limits, changes occur in the turbidity of the solution. I do not know why. We have at least been able, now that we have pure antiserums, to test out these precipitates, to find out what we are dealing with, and to have a method of identifying our precipitates.

Loose Bodies in Joints.—The knee joint cavity is divided into five distinct but intercommunicating compartments—three in front and two behind. These are the suprapatellar pouch and the anteromesial, the anterolateral, the posteromesial and the posterolateral compartments. Each pouch allows of separate exploration through a relatively small capsular incision. A loose body originating in one of the anterior compartments finds a free passage from one to another, but does not ordinarily make its way into a posterior compartment, as the connecting path is somewhat circuitous. Free communication between the two posterior pouches is, for practical purposes, blocked by a midline synovial partition connected with the posterior crucial ligament.—Platt, Harry, *Brit. M. J.*, May 28, 1927.

THE RELIEF OF ITCHING BY EPINEPHRINE IN CERTAIN CASES OF INFANTILE ECZEMA *

J. D. PILCHER, M.D.
CLEVELAND

Every one who sees infants with eczema appreciates the extreme suffering they frequently manifest. The infant himself may not only rest and sleep very little but his constant fretting and crying deprive the other members of the family of their rest, so that it is not uncommon to have a mother state that she has not slept for weeks or even months, implying, of course, that she has had no uninterrupted restful sleep during that time.

One morning an infant in the hospital ward suffering from a severe form of eczema freed himself from restraint and manifested every evidence of extreme discomfort; he was given epinephrine intramuscularly; in two minutes he was quiet and in three minutes was asleep and slept for more than an hour. During the rest of the morning he seemed comfortable; the best he had been in the hospital, one of the attendants remarked.

Since this experience I have usually seen the subjects in the hospital with eczema when they manifested discomfort, and if the discomfort seemed sufficiently severe and to be due to the eczema epinephrine has been administered subcutaneously or intramuscularly and the observation continued at least fifteen minutes.

During the past two years seven such infants have received something more than twenty injections and relief was manifested from about three fourths of them. Several times also the nurses on night duty found that relief was obtained and sleep followed the use of epinephrine. The relief is usually striking, is noted promptly, often within two minutes, just as it is in urticaria, and may persist for an hour or more, and not infrequently the patient falls into a restful sleep. These infants were from 5 to 14 months of age; five of them were of the vigorous, well nourished type in which eczema is so commonly seen; two of them were somewhat undernourished. A 30 month old boy with a severe generalized eczema of long duration, so that the skin was dry and much indurated and in numerous places infected from continuous scratching, seemed to be unaffected by several epinephrine doses. A sister, 6 months old, however, in the hospital at the same time, was favorably affected by epinephrine.

A much larger number of subjects with less marked eczema did not receive epinephrine because it was thought that their suffering from skin irritation was not sufficiently severe to enable us to be certain whether or not the epinephrine would be effective.

CONTINUED USE OF EPINEPHRINE

Five infants of this group received epinephrine every three or four hours hypodermically or intramuscularly during the day for from two to twelve days and occasionally at night when indicated. It seemed that they were more comfortable than during the days without it. One intelligent mother remarked that she had never seen her infant so comfortable as when he had epinephrine.

EPINEPHRINE BY MOUTH

Although it is usually held that epinephrine does not show physiologic effects when given by mouth, the literature contains reports of a certain number of adults

* From the Babies' and Children's Hospital and the Department of Pediatrics, Western Reserve University.

who have reacted to the administration in this manner, notably by a considerable rise in blood pressure. For this reason in three subjects epinephrine was given by mouth every three or four hours during the twenty-four hour day for several weeks without appreciable effect on the course of the disease, either by lessening the evidence of irritation or by shortening its course. A considerable number of dispensary patients, also infants, have been given epinephrine by mouth, without conclusive results; for while several mothers thought that their infants, at times, showed less discomfort with its use, other mothers did not, and the natural course of eczema even without treatment is so variable that no credence at this time should be placed in these results. The average dispensary patient, too, is unsuitable for critical study of this kind, for one cannot know whether a drug is given at home, so for this reason only those cases are reported that were observed in the hospital.

DOSAGE

The hypodermic dose was from 0.1 to 0.3 cc. of the 1:1,000 solution, seldom more than 0.2 cc., however. This is somewhat large in comparison with the usual adult dose, but harmful results were not seen. Occasionally pallor of the face and extremities (from vasoconstriction) was noted, of but a few minutes' duration without other signs of toxicity. It is my impression that the relatively large dose is necessary for effective results. The infants varied somewhat in their reaction to epinephrine, for instance one of 9 Kg. weight was relieved of its suffering with 0.15 cc. and became quite pale with 0.2 cc., while a 5.5 Kg. infant of about the same age required 0.2 cc. for effective results and showed pallor only with 0.3 cc.

COMMENT

Infants with eczema, just as do other infants, cry and fuss from causes other than skin irritation. A number of times very restless, squirming infants were not quieted by epinephrine but became quite happy on receipt of a bottle. On the other hand, in one instance an infant was very restless and uncomfortable at feeding time, and would take neither her mother's breast nor complemental bottle, but became quiet with epinephrine and nursed well. In the presence of a mother who for weeks had taken her infant in arms at every whimper, epinephrine was not effective on one occasion but was so at other times after the mother had been persuaded to remain away from her infant.

No reference has been found in the literature to the use of epinephrine against itching in infantile eczema. Holländer [1] noted marked decrease in the itching and discomfort in three cases of eczema and in other skin lesions associated with itching in adults. The epinephrine was given subcutaneously, by mouth and in an ointment.

Ephedrine gives relief in many cases of asthma. As it is usually effective by oral administration, it is suggested that it be tried in suitable cases of eczema. We have nothing to report at present.

CONCLUSIONS

From these results it appears that epinephrine subcutaneously or intramuscularly gives temporary relief from the severe discomfort of certain eczematous infants as it does in urticaria. Sufficient data are not at hand to warrant an opinion as to whether it is otherwise beneficial in eczema, further than that its sedative action lessens the effect of the trauma from the scratching.

1. Holländer, A.: Chronic Treatment with Epinephrine, Deutsche med. Wchnschr. 51:439 (March 13) 1925.

Clinical Notes, Suggestions and New Instruments

UNUSUAL COMPLICATION FOLLOWING A LOW CESAREAN SECTION *

ALICE F. MAXWELL, M.D., SAN FRANCISCO

A. V., a Greek woman, aged 27, a multipara, seen in the outpatient department of the University of California Obstetrical Service in the seventh month of her second pregnancy, had been delivered of her first child seventeen months previously by cervical section, by an experienced obstetrician, after some hours of labor. A cephalopelvic disproportion was the reason for section. Her convalescence was uneventful, and she was discharged after thirteen days.

The pelvic measurements, physical examination and pregnancy were normal, but the patient was advised to report to the hospital with the onset of labor pains. In general, it has been the policy of the department not to permit a patient to attempt natural labor after a previous cesarean section.

Labor began late at night, just at term, but the patient did not enter the hospital until four hours had elapsed, at which time the pains were coming every three minutes and were nonexpulsive in character. The membranes had not ruptured, and there was no hemorrhagic discharge. No rectal or vaginal examination was made, and she was immediately prepared for a laparotomy. Within an hour the patient was catheterized and anesthetized; the old scar extending from the umbilicus to the symphysis was excised and the abdominal cavity entered. A few omental adhesions to the former midline incision were readily freed and the lower portion of the uterus presented. Much to my surprise, a fair sized hematoma about 3 inches (7.6 cm.) in diameter was found under the peritoneum at the vesico-uterine junction. The peritoneum was excised at this point, and the blood clot removed, which showed that the bleeding was coming from a rent in the uterus just behind the bladder. The rupture was about 2 inches (5 cm.) long, running in a longitudinal direction, and a finger was passed through the separation directly into the lower uterine cavity. There was no difficulty in separating the bladder off the uterus, enlarging the incision through the rupture and delivering the child.

An 8 pound (3.6 Kg.) baby girl was delivered in good condition. The mother made a rapid recovery, and was discharged on the fourteenth day.

COMMENT

This case has been presented because it brings out several interesting and instructive features:

It is one of the few reported instances in American literature of uterine rupture occurring after a cervical cesarean section. Indeed, the rarity of this complication after this type of incision has been emphasized as one of the advantages of the operation.

Our methods of judging the strength of the uterine scar and its ability to stand the strain of subsequent labors are not infallible. The history of an easy normal convalescence and discharge from the hospital within two weeks would suggest the absence of uterine infection at the first operation, with resulting good healing of the incision. Nor can the weakness of the scar be attributed to inexperience and poor approximation of the cut surfaces. The surgeon at the first operation was an experienced man and an enthusiastic advocate of the advantage of the low cervical incision.

All obstetricians recognize that low implantation of the placenta may impair and weaken the uterine wall. The absence of this complication or any etiologic factor leading to weakness of the scar is significant.

Finally, this case serves to emphasize that a scar in the uterus, in either the upper or the lower portion, is not innocuous, and must be regarded as a factor of unknown strength. Its integrity in subsequent labors cannot be determined by our present methods of diagnosis, and its potentialities to rupture must always be appreciated.

* From the University of California Medical School.

DIPHTHERIA: A CASE OF LABORATORY INFECTION*

ROBB SPALDING SPRAY, MORGANTOWN, W. VA.

Numerous references to laboratory infections with plague, typhoid, tularemia and other diseases may be found in past and current literature. Similar references to diphtheria, however, seem to be quite uncommon. The instance presented here of a clear-cut laboratory infection, establishing a definite incubation period, peculiarly supported by a control, would appear to warrant a brief report.

In a class in medical bacteriology a strain of the diphtheria bacillus was given out for cultivation, Tuesday, April 19, 1927. This strain was isolated three years ago during a local epidemic from one of a family in which four severe cases developed. Its toxicity has been repeatedly demonstrated by death of inoculated guinea-pigs within three days.

Cultures were given out on Loeffler's serum with considerable condensation water on the slants. During the course of the hour one student reported that the tube from which he inoculated had been tilted and the cotton plug wetted, and that on flaming the plug and shaking to extinguish the flame he had spattered his face. We at once required him to wash his hands with 5 per cent phenol (carbolic acid) and his face with mercuric chloride, followed by hot water and soap. This man, who may be considered a "control," remained well.

On Friday another student was absent from class, and it was reported that he had a "sore throat." On Saturday at noon a throat swab was submitted from him by a local physician, who reported a definite membrane, pulse rate 120, and temperature 100.5 F. Direct examination revealed numerous spironemas and fusiform bacilli, giving a definite suggestion of Vincent's angina, but there were also observed numerous slender bacilli of diphtheritic morphology, except that granules were not sharply defined with either Neisser's or Albert's stain. However, in view of the history and the toxic condition, 10,000 units of antitoxin was given intravenously without awaiting further report. On the following day Loeffler's serum culture showed a profuse growth of a typical slender granular diphtheria bacillus, identical in morphology with the laboratory strain. A pure culture was isolated, and a guinea-pig inoculated with this strain died in less than ninety hours.

The patient stated that within three hours of the administration of antitoxin his temperature and pulse rate dropped, and the toxic symptoms had practically disappeared. Within twenty-four hours the soreness in the throat subsided and the membrane faded. He made a prompt and complete recovery, and two negative cultures were obtained on the eighth and ninth days from the date of injection of antitoxin, on which he returned to class. Questioning revealed that this student had the same experience as the "control," but regarded the matter lightly and did not report the incident or take any prophylactic precaution. It may be of interest to note that the case has served to stimulate a healthy respect among the students for the subject of bacteriologic technic as applied to pathogenic bacteria.

OTOMYCOSIS: REPORT OF THREE CASES

P. M. LEWIS, M.D., MEMPHIS, TENN.

I am prompted to report these cases because of a recent article[1] on otomycosis by Dr. Joseph W. Miller of New York.

REPORT OF CASES

CASE 1.—Mrs. F., aged 40, seen in my office, June 16, 1926, had never had any ear trouble until four days previously, when she noticed an itching and fulness in the right ear. Examination showed a large whitish gray mass, completely covering the membrana tympani and the lining of the bony canal wall. Strong irrigation dislodged the mass, which was like a cast of the drum membrane and inner canal wall. It was definitely a fungus growth macroscopically, so microscopic examination was not made. The ear was scrubbed out with 95 per cent alcohol and 2 per cent salicylic acid in alcohol prescribed for use at home. There were no further symptoms and no recurrences.

CASE 2.—Mrs. F. M. P., aged 26, referred by Dr. Henry Watkins and seen, Sept. 13, 1926, stated that the left ear had been stopped up for two weeks, and that there had been considerable itching and rather severe pain for the past two days. Examination revealed a very large, yellowish white mass which filled the inner portion of the canal and covered the membrana tympani. The same treatment as in case 1 was used with immediate relief of all symptoms. Microscopic examination showed the growth to be a mold, *Aspergillus flavus.*

CASE 3.—G., a man, aged 20, seen, Oct. 28, 1926, stated that the right ear had felt stuffy for four weeks, had itched a great deal, and for the past week had been very painful. Examination showed a dirty grayish mass covering the drum membrane and the anterior and inferior canal wall in its inner half. The treatment used in cases 1 and 2 was employed with the same result. Microscopic examination of the mass showed *Aspergillus niger.*

COMMENT

Dr. Miller states that his two patients had been using olive oil in their ears. It is the usual teaching that oils or glycerin have been used in ears which develop otomycosis. Bezold found that 75 per cent of all the patients he saw had been using them. None of my three patients had ever had previous ear trouble. They were all intelligent, educated people. None of them had ever used a drop of any kind of oil or glycerin in their ears. I questioned them particularly about this, as I had been taught that the use of oils was practically always responsible for fungi growing in ears. It is now my belief that the history of oils having been used is a mere coincidence. People have a deep-rooted conviction that oils and glycerin are very beneficial for ear ailments, especially if there is any pain or itching. It is therefore obvious that a large percentage of patients with otomycosis will give a history of having used "sweet" oil or something of the sort in their ears.

Why these fungi lodge and grow in some ear canals I do not know, but the diagnosis is extremely easy and the treatment very simple and efficacious.

1224 Exchange Building.

TREATMENT FOR ACUTE TRAUMATIC HEMATOMA OF EXTERNAL EAR

HARRY A. BRITTON, M.D., ITHACA, N. Y.
Athletic Physician, Cornell University

This condition, which is common among boxers and wrestlers and is less frequently found among men engaged in other sports, responds as a rule to a very simple treatment. During the last five years I have had the opportunity to treat about 100 cases, and in all of these I have obtained good results. I feel that I can promise a perfect ear if instructions are followed.

The treatment consists first in aspirating the blood or serum which is present and then applying pressure to the anterior and posterior surfaces so as to place and keep the surfaces once separated by the fluid in apposition. Aspiration can be done immediately or at any time within five days after the date of injury. This pressure should be applied for six or seven days, and can then be safely removed. To get the best results the ear should be carefully protected, and not be injured even slightly for about two weeks after treatment; otherwise, some thickening is apt to occur. In wrestlers it is often impossible to stop them from practice for a period of a week or more; so I make no promise that they will get a perfect ear. I usually tell them they are liable to have some thickening. In a number of cases, however, this thickening has been so slight that it is not noticeable except to those who know about the injury.

The method of applying pressure varies considerably. If the hematoma occurs along the edge of the ear, i. e., in the fossa of the helix, I cover a piece of number 18 copper wire with adhesive tape very evenly, bend it so that it fits the fossa perfectly, and then by small pieces of adhesive tape draw the edge of the ear firmly over the covered wire. This I always remove during wrestling practice. Recently, I took a small piece of felt instead of wire and fastened it in the fossa with a very good result.

When the hematoma is in the concha or in the fossa of the antihelix I fill these parts with plaster of paris and apply

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* From the West Virginia University Medical School.

1. Miller, J. W.: Otomycosis: Its Relative Frequency, J. A. M. A. 88: 1077 (April 2) 1927.

pressure by the use of the copper wire, making a loop on each end, covering these loops with adhesive tape, and then bending the wire so that one loop is pressing on the plaster cast and the other on the back of the ear. This should be left on for a week. The amount of pressure applied is just enough to be felt. If pressure is made too great the ear will become tender, and a raw surface will develop as a result of pressure necrosis.

If the patient wishes to continue with his sport, I often use thick collodian and cotton instead of the plaster of paris, packing it in firmly, allowing it to dry and then applying the wire as described. I remove the wire whenever the patient wishes to practice, however, and reapply it as soon as practice is over. I do not consider this method ideal but I have been able, with its use, to carry several boys through the wrestling season with little or no deformity.

I have not found aspiration in itself to have any value, and I believe that the success of the treatment depends on the proper application of pressure after aspiration. I aspirate all hematomas whether small or large, having obtained as little as 0.1 cc. and as much as 5.5 cc.

Prevention of this condition, however, is even more important than its treatment, and a very effective scheme for prevention is to pad the ears front and back with cotton and then bind them close to the head with a band of adhesive tape 1½ inches wide by 30 inches long. Protected in this way, a wrestler may safely withstand considerable "roughing" as far as his ears are concerned.

New and Nonofficial Remedies

PLASMOCHIN

Preliminary Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following statement. W. A. PUCKNER, Secretary.

Plasmochin is a synthetic quinoline derivative, developed in Germany and proposed for use in the treatment of malaria. For many years attempts have been made to find a substitute for quinine that would be cheaper, less bitter, less toxic and more specific than the natural drug. Plasmochin appears at least to represent a step forward in this search, though it is by no means a full solution of the problem of eradicating malaria. It is said to act by destroying some of the forms of the malarial parasite and by inhibiting the development of others.

Reports have been published on the use of Plasmochin in malaria produced in canaries, and some clinical trials have been reported. All of this work seems honest, efficient and well controlled. No overstatements or overenthusiasms appear anywhere, except possibly in the papers by Prof. P. Mühlens of Hamburg. Professor Mühlens mentions cyanosis and gastralgia as toxic symptoms in man when large doses of Plasmochin are used. But Dr. P. Manson-Bahr states (*Brit. M. J.*, March 12, 1927, p. 466) that cyanosis, due apparently to the production of methemoglobin in the blood, may occur in some sensitive human beings on a dose of the drug less than that necessary to affect the malarial parasites. Manson-Bahr also states that in man the effective dose of Plasmochin causes the appearance of urobilinogen in the urine for several days. All of the observers, both of man and birds, appear to agree that:

1. The new drug is most effective on the quartan forms of malarial parasite.

2. In tertian malaria a combination of the new drug with quinine (in dosage of 0.01 Gm. of Plasmochin and 0.125 Gm. of quinine sulphate) is more effective than Plasmochin alone.

3. As shown by Dr. Roehl's work on bird malaria, Plasmochin, in this animal, is sixty times more effective than quinine.

It should be pointed out that results derived from the study of bird malaria have chiefly a suggestive value, and that, in view of previous disappointing results from widely heralded new drugs, further clinical study must precede any really optimistic estimate of this drug's therapeutic value in human beings.

Plasmochin is manufactured by the I. G. Farbenindustrie Aktiengesellschaft, Germany. In the German publications, Plasmochin is somewhat indefinitely stated to be an alkylamino-6-methoxyquinoline salt. The Winthrop Chemical Company states that it has imported a considerable quantity of the drug in the form of tablets for clinical trial on a large scale by American investigators; the packages of these tablets bear as a synonym for Plasmochin the somewhat more definite chemical term, ethylaminoquinoline tannate. The Council asked the Winthrop Chemical Company to furnish a supply of the drug itself, so that standards which shall assure the identity and uniformity of the product may be established. The firm replied that it would endeavor to secure the requested specimen from the manufacturer in Germany, but that the product when placed on the market in this country will be manufactured here.

The Council has authorized the publication of the preceding statement in response to requests for information regarding Plasmochin, and has postponed further consideration until clinical evidence concerning the efficacy, safety, and dosage of the product is available. The Council, however, at this time calls attention to the fact that the name chosen for the compound, Plasmochin, has a certain degree of therapeutic significance instead of indicating, as it properly should, merely the chemical composition of the product. A list of references to Plasmochin is appended.

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Plasmochin, editorial, Lancet **1:** 664 (March 26) 1927.

Heart Block.—Recent advances in cardiology have confirmed the views, more than once expressed, that life is mainly threatened by myocardial conditions, and in these are included changes in the sino-auricular node, auriculoventricular node, and the bundle of His. . . . I need only briefly mention the two special nodes of tissue, the sino-auricular node close to the base of the auricles, also the auriculoventricular with the bundle of His running down in the myocardium and dividing into two branches, one for each of the ventricles. The impulse to rhythmic cardiac contraction originates in the tissue of the sino-auricular node, and is transmitted by the muscular fiber of the auricular walls to the auriculoventricular node, and therefrom by the bundle of His to the ventricular walls. The heart is supplied by branches of the vagus and the sympathetic system of nerves; branches of both of these reach the sino-auricular node, also the auriculoventricular, while the substance of the cardiac muscle is capable of originating beats of its own. When through disease the sino-auricular node ceases to function, the auricles pass into a condition of fibrillation, but the ventricles still continue to beat at a rate and with a rhythm special to themselves. One of the results of alteration in the rhythmic discharge of impulses from myogenetic and cardiac nervous mechanisms is the occurrence of extrasystoles or of tachycardia. . . . An extrasystole is but a single contraction due to the impulse which produces it being discharged earlier than those normally emerging from the sino-auricular node. . . . "Heart block" is an irregularity of rhythm due to some defect in the auriculoventricular node, or the bundle of His, whereby impulses from the sino-auricular node are not conveyed to the ventricles, and as a consequence the ventricles commence to beat spontaneously.—Oliver, Thomas: Heart Disease and Pregnancy, *Brit. M. J.*, April 16, 1927.

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SATURDAY, JULY 9, 1927

LIMITATIONS OF GOITER PROPHYLAXIS

Interference with the usual routine of life and activities of individuals is seldom popular in modern democratic governments. This is true in relation to the physical and mental health of persons as well as with respect to their working schemes and political doings. Consequently it is not easy to institute plans for human betterment of either a physiologic or a social character on any wholesale basis involving large or fixed groups of the population. The history of attempts at universal vaccination illustrates this. It crops out also in efforts at widespread physical examination. If these are made compulsory, they are likely to be regarded as an insult to personal liberty. Nothing short of education can overcome these inborn feelings; nor is it wise in a democracy to tolerate the subjugation of the individual except under circumstances that have a nearly universal appeal of wisdom and justice.

The relation of a shortage of iodine in the environment to the incidence of endemic goiter has become well founded.[1] Extensive data are now available to show that iodine is of wide distribution in minute traces and is more or less concentrated by the leaves of plants and the thyroid glands of animals. Goiter is due to a deficiency of iodine. In the words of a recent writer,[1] the history of the past century teaches most emphatically that the treatment of goiter is unsatisfactory and accomplishes little toward the control of the disease, but those attacking the problem from the standpoint of preventive medicine—physiologists, biochemists and public health authorities—have accumulated sufficient evidence to justify the assertion that endemic goiter is the easiest known disease to prevent. By further detailed study of the fundamental principles underlying the cause and prevention and with the constant application of scientific data by the state health organizations, we should, he concludes, see the fulfilment of an earlier prediction: Within another generation there will be no endemic goiter problem.

1. McClendon, J. F.: The Distribution of Iodine with Special Reference to Goiter, Physiol. Rev. **7**: 189 (April) 1927.

Until recently, so-called goiter surveys were largely concerned with regions for which a high incidence of the disorder was either known or suspected. There is ample reason for believing that proximity to the sea confers a comparative freedom from endemic goiter.[2] Not only are the food and drinking water obtained near the sea more likely to contain the iodine needed to prevent goiter, but the wafting in of ocean spray is believed by some to contribute measurable quantities of the requisite element. Moreover, the inclusion of sea food in the dietary undoubtedly aids in maintaining the equilibrium of the thyroid gland. The observation that endemic goiter is least frequent along the seacoasts apparently holds true, with minor exceptions, in America and in Europe; for the disease is most conspicuous in the interior of these continents. There are some exceptions, however, that indicate the real need of specific rather than generalized information for each district. The newer studies of some of the states on the Atlantic Coast furnish instructive evidence from which it is apparent that endemic goiter is present to a far less extent in Massachusetts than in certain states in the Great Lakes Basin. Moreover, the incidence of goiter is not uniform in Massachusetts, being least along the seacoast and greatest in the central and western portions. Connecticut presents similar features.

Because of the relatively slight incidence of thyroid enlargement in these states and the fact that a large majority of the involvements are of the minor type, the government experts[2] believe there is no reason for special preventive measures on the part of the state and local health departments. They do not see any necessity for universal prophylaxis such as may be attained by iodization of table salt or municipal water supplies. This advice is in accord with the position taken by THE JOURNAL and supported by such consultants as Plummer and Marine.[3] It will not be amiss to repeat the warning of Olesen and Taylor.[2] It should be remembered, they remark, that the treatment of endemic goiter is frequently disappointing. Especially should it be recalled that iodine, used in treating goiter, is a two-edged sword. When used injudiciously, either in improper doses or in certain types of goiter which are made worse by such medication, iodine may inflict irreparable harm. Only the well trained and experienced medical practitioner should undertake to treat existing goiters.

In localities, such as those referred to, where goiter does not become a problem for community prophylaxis, the responsibility of the practicing physician becomes all the greater. To him is shifted the more serious responsibility for the exceptional "few individuals" in a "few localities." Probably the period of pregnancy presents an outspoken instance for his consideration. An observer in this field has remarked that every sur-

2. Olesen, R., and Taylor, N. E.: Endemic Thyroid Enlargement in Massachusetts, Pub. Health Rep. **42**: 804 (March 25) 1927.

3. See also Oleson, Robert: Iodization of Public Water Supplies for Prevention of Endemic Goiter, Pub. Health Rep. **42**: 1355 (May 20) 1927.

vey or study emphasizes the importance of prevention during pregnancy. The relation of congenital defects to the adenomatous or tumor conditions of later life is being appreciated more and more with each careful study. The disappointments in our attempts to control or treat tumorous thyroids are known. Therefore, he adds, we cannot stress this point too strongly and in endemic goiter districts we need the attention of the physicians who educate and direct women through this important period, and of every prospective mother. According to Marine,[4] the administration of iodine, possibly to the extent of a milligram a day during pregnancy and lactation, would be an excellent physiologic procedure, whether the individual resides in a district where the incidence of goiter is high or in a district where the incidence is extremely low. Iodine would be beneficial in meeting the increased physiologic demands during these periods even though the natural supply of the element is always sufficient to prevent thyroid enlargement.

VACCINATION OF THE NEW-BORN AGAINST TUBERCULOSIS WITH BACILLUS CALMETTE GUÉRIN

The history of the vaccination of new-born infants against tuberculosis with Bacillus Calmette Guérin (abbreviated to B C G) since July 1, 1924, in France and other countries over a period of two and one-half years to Jan. 1, 1927, has just been reviewed by Professor Calmette with his co-workers Guérin, Nègre and A. Boquet at the Pasteur Institute in Paris. Indeed, the entire March issue of the *Annals of the Pasteur Institute,* consisting of 368 pages, is devoted to this subject. The vaccine is a living tubercle bacillus of bovine origin rendered avirulent for all animals by 230 passages on bovine bile medium. While the authors quote the reports of other workers and use these as reasons for suggesting the vaccination of new-born children with B C G, they depend chiefly on their own experimental work as the prime reason.

For the preparation of the vaccine, the B C G organism is transferred from the bile medium to a synthetic medium from which in about three weeks, when it has attained a full film and the living organisms are at the maximum, the clear underlying medium is removed by a pipet. A number of sterile glass beads and a small quantity of dextrose solution are then added to the flask in which the bacilli remain, and this, fastened on a brass plate operated by an electric motor, is slowly revolved for fifteen minutes, when the clumps of bacilli are broken and an emulsion of bacilli is obtained. The emulsion is then diluted with a solution of 1 per cent dextrose and 4 per cent glycerol in water and shaken until the whole quantity is such that 2 cc. contains 0.01 Gm. of the bacilli. The liquid vaccine is then placed in ampules of 2 cc., which constitutes a single dose to be fed to an infant in milk. Three successive 2 cc. doses are given to each infant with two days intervening between each dose; for example, the doses are given on the third, fifth and seventh days of life. Each dose is approximately 100 mg. by weight, or 400 million bacilli of B C G.

In France alone, up to Jan. 1, 1927, 21,200 children had been vaccinated. As many more in Belgium, Roumania, Greece, Algeria and Indo-China raise the total to 43,283 children. Out of this large number vaccinated, only 982 were suitable for statistical study by Moine and 1,050 by Biraud. The 1,050 of the latter's studies presumably included the 982 used by Moine and therefore may be taken as the maximal number so carefully recorded as to satisfy the statistician. For these, however, there were no control groups and both statisticians were compelled to compute control figures from general death rates and from reports of studies for other purposes and from other periods. They arrive at mortality rates from tuberculosis of 26 per hundred from tuberculosis dispensaries and 32.6 per hundred for all children under 1 year of age, Paris born and left in a tuberculous environment (p. 206). These figures are based on reports as far back as 1913, and for Stuttgart as far back as 1889. For the period 1924-1927, after years of intensive antituberculosis work they do not have mortality figures with which to compare their experimental statistics. There are almost no necropsy studies in the series of those dying. Another conclusion which a careful perusal of the figures forces on the reader is that vaccination not only lowers the mortality rate from tuberculosis but also lowers that from all other causes of death. It would seem that the care and education which precede and follow vaccination must render as preferred the group of children and families studied, and that the full truth is not evident from the comparisons drawn. It is a matter for regret that, in an experiment so far reaching and so extensive, care was not taken to secure control figures that might have made the published results more convincing.

Other features of the different papers are striking. In the first paper reference is made to the infection of the fetus by a so-called tuberculous ultravirus which traverses the placenta. This type of fetal infection is one explanation offered for the high death rate in the first year of life of infants born of tuberculous mothers, and it is used as one chief reason for vaccination with B C G in the early days after birth. The finding of Valtis (p. 211) and others that a new-born child already is infected with a potential living infection is contrary to the accepted views and, if found to be true in general, would be of far-reaching importance. It would, however, in a measure render necessary a reconstruction of the premise on which the proposed vaccination is based; for in such a case the child would already be potentially infected or possibly resistant to

4. Marine, David: The Importance of Our Knowledge of Thyroid Physiology in the Control of Thyroid Diseases, Arch. Int. Med. **32**: 811 (Dec.) 1923.

a reinfection. It would seem imperative that this question of the presence of a filtrable virus in the fetus of a tuberculous mother be determined by most careful work.

The question of tuberculin reaction in infants during the first year of life also forms a serious phase of the problem. The instructions accompanying the vaccine state that the tuberculin test should not be used, as it is of no value in infants under 1 year of age. But the authors state on page 208, "We already know by studies of the tuberculin reaction (Pirquet) that of every 100 children living in a tuberculous environment seventy-six are infected at the end of the first year." On page 257, however, Weill-Hallé, who alone seems to have followed his clinical studies with the care of scientific accuracy, finds that at the end of the first year in those vaccinated with B C G by ingestion 26.6 per cent of positive reactions develop in children born in a tuberculous environment and only (p. 258) 7.6 per cent in those born in a nontuberculous environment. At the end of two years the percentage of the vaccinated born in a tuberculous environment with positive reactions is 60, or a little more than double the number observed the first year, while of those in a nontuberculous environment the percentage with positive reactions is 28, or nearly four times as many as in the first year. A fair conclusion from these figures would seem to be that the ingestion of avirulent tubercle bacilli does not have great influence on tuberculin sensitiveness and, from our former knowledge, we could safely add, on infection with tubercle bacilli from the outside. Certainly ingestion of B C G does not produce skin sensitiveness in 100 per cent of those vaccinated in this way.

This is further substantiated by the work of Remlinger and Bailly (p. 288) in guinea-pigs, for none of these developed skin sensitiveness after ingestion of B C G and yet there were acid-fast organisms in the stools of these animals from the second to the twelfth day, which disappeared completely only after the sixteenth day.

In sharp contrast to this is the study by Weill-Hallé and Tarpin on a small group of children vaccinated subcutaneously with B C G. All these developed a skin sensitiveness to tuberculin in from two to three months; the determination of the exact time of its appearance was interfered with by the time of the return of the child to the clinic. In each case of the latter group, as in cattle and other animals inoculated subcutaneously, a tuberculous process of cold abscess was caused with resulting sensitiveness of the skin. Surely the only conclusion is that ingestion of avirulent tubercle bacilli does not as a rule create the condition which we have all believed to be the evidence of tuberculous infection—a tuberculin reaction.

This does not dispose of the question, however, of the persistence of tubercle bacilli in the intestines for a period of ten days in guinea-pigs (p. 288). Their very presence there, possibly multiplying, may create itself a surface or a general resistance to the invasion of bacilli of greater virulence or invasive power. From this standpoint, vaccination by ingestion may be of significance. Even if the evidence offered in these papers is not convincing at present it may possibly lead to new knowledge.

Guérin, Nègre and Boisière (p. 233) devote a paper to a cattle experiment but, while it is of economic interest, the method of vaccination is subcutaneous and is not therefore in the same category as vaccination of the new-born by ingestion of avirulent B C G.

This may also be said of the Dissé experiment with monkeys (p. 205). There was only one monkey vaccinated with B C G by ingestion alone and, while this is suggestive, further proof is required before it could be used as a basis for human vaccination.

These papers may be said to represent the culmination of the life work of a revered scientist. They may open a new era in the eradication of tuberculosis and in the knowledge of its epidemiology. For the United States, however, and for all countries it would seem wise to hold in check uncontrolled enthusiasm for its use until those charged with the responsibility of safeguarding the public have carefully proved that the method and the premises are sound.

THE CHANGING RECORDS OF MORTALITY

Viewed from an economic standpoint and stated somewhat bluntly, the value of the individual depends in considerable measure on the length of his life. National welfare, so far as it is an expression of possibilities of human performance, is inevitably concerned with the problems of mortality. The health and vigor of a race or group is a decided asset; ill health and its consequences are burdens imposed on the population. Students of civilization have inquired whether or to what extent it is actually necessary for the world to carry this "colossal load" of human misfortune. One can readily understand why every report of a better turn in the mortality trend is so heartily welcomed.

Indications from modern biologic investigations might lead to the conclusion that death is neither inevitable nor fundamentally necessary. The "immortality of protoplasm" is at once suggested by the modern study of tissue cultures. Cell masses kept alive outside the body, as in the experiments of Carrel of the Rockefeller Institute for Medical Research, have continued to multiply and grow apparently unchanged by time during more than a decade. This accomplishment has depended on securing a suitable external environment for the isolated cells. Woodruff's demonstration, at Yale University, of the uninterrupted reproduction of protozoan protoplasm without conjugation through several thousand generations of paramecia likewise raises the question as to the necessary

interruption of existence. One can understand, then, why a modern imaginative writer[1] should have suggested that if one could at intervals thoroughly wash man free from his poisons and nourish him, there seems to be no reason why he should not live indefinitely.

On the other hand, there are plenty of indications of Conrad's reminder of the "faithful death that never forgets in the press of work the most insignificant of its children." Pearl[2] has argued that the potential duration of life is definite and unchangeable: it is a function of bodily organization. It is seen in all forms of life: after a certain definite period death is a natural consequence whether the living thing is a plant or an animal, invertebrate or vertebrate, cold blooded or warm blooded, bird or mammal. Rarely, however, is this full potential span of life realized: some environmental factor steps in to terminate life before its natural course is run.

From this standpoint, the problem of effective living and personal hygiene consists in making the actual duration of life approach the potential opportunity. If age-mortality statistics were available from throughout the centuries, it would be possible to ascertain whether the actual span of life has been materially altered for the human race with the progress of time. The records of the past often present themselves in most unexpected ways. The paleontologist and the geologist read the age of the earth from the rocks. An ingenious anthropologist, Professor Todd[3] of Western Reserve University, has attempted to secure a correct appraisal of the ages at death in bygone days by "wringing the secret from the bones themselves left immutable by time in the grave." According to Todd, it is possible by examination of skeletons to estimate the age at death of ancient or primitive populations. For example, from adolescence to the age of 25 years, union of epiphyses is the dominant feature. From 25 to 30 years, closure of sutures continues the tale along with the consolidation of areas, such as the symphysis pubis, which possess rudimentry epiphyses. From 30 to 35 years, the skeleton is at its prime and there is a lull in differentiation. At subsequent ages, other bony structures have distinguishing characteristics.

The study of old skeletal remains in various parts of the world indicates that the "peak" of the mortality curve coincided with a comparatively early age. Todd asserts that the straws of evidence all point in the one direction. The peak of old-age-death, so prominent in modern mortality curves, fades into insignificance the further one recedes from the present day, and in the dimmer records of the distant past there is no real indication of its existence. This does not gainsay the record of an occasional patriarch among men; it is the story of the average man of old. The chief difference, according to Todd, between ancient peoples and civilized populations of today is the apparent fact that the peak of old-age-death is a comparatively modern achievement resulting from greater safety and improved conditions of living. He believes that the difference between the peaks of mortality in primitive and ancient people, on the one hand, and of modern civilized humanity, on the other, is roughly thirty years.

The evident prolongation of human life in the course of time does not apply uniformly to all groups of modern society. Even today one can find the analogue of the older civilizations. In the so-called lower strata the old-age peak characteristic of today is not to be found, owing to the relatively great hazards of life to which these unfortunate people are exposed when not sheltered by specific social legislation. This, at least, is Todd's interpretation of the story in which he has attempted to reconstruct the record of mortality of the life of lost centuries. It inspires a belief that what we call modern civilization has, after all, some positive accomplishment in respect to human longevity among those in whom its influence can make itself most felt.

1. Fisher, Irving; and Fisk, E. L.: How to Live, New York, Funk and Wagnalls Company, 1925, p. 182.
2. Pearl, Raymond: Span of Life and Average Duration of Life, Natural History **26**: 26, 1926.
3. Todd, T. W.: Skeletal Records of Mortality, Scient. Month. **24**: 481 (June) 1927.

Current Comment

THE NATURE AND RELIEF OF PARALYTIC ILEUS

Cessation of movements of the bowel may have a train of serious consequences. The problem is always serious to the clinician, particularly because it may incidentally attend operative intervention with other parts of the body as well as outspoken disease. A paralysis of the bowel is a familiar concomitant of violent irritation of the sensory nervous mechanisms. It is frequently one of the undesired accompaniments of the opening of the abdominal cavity as well as traumatization of structures within it. The term ileus has often been applied to such paralytic conditions of the intestines; but as the same expression is also used at times in relation to obstructions of various sorts, it ought probably to be abandoned because of indefiniteness. So-called paralytic ileus may be attended with chemical changes in the blood which have even been charged with etiologic significance for the genesis of the inactivity of the bowel. The clinical importance of ascertaining its nature and possibly a method of averting paralytic ileus is further stressed in recalling that the condition described may become complicated by secondary changes in the wall of the bowel due to stagnation of the intestinal contents, intraperitoneal suppuration or local anemia.[1] The circumstance that it is possible to produce an intestinal paresis experimentally in animals has greatly furthered the investigation of its problems. In man the ileus results occasionally after severe injury to a limb, after a trifling abdominal operation, or even after a severe nervous shock. The laboratory animals seem

1. Compare Occlusion and Gaseous Distention of the Bowel, Current Comment, J. A. M. A. **88**: 2038 (June 25) 1927.

to be somewhat less susceptible to the impairment of intestinal motility. Markowitz and Campbell [2] of Toronto have recently confirmed the observations of Wagner [3] that spinal anesthesia promptly restores bowel movements in cases of paralytic ileus. The Canadian investigators believe that the prompt curative effect of spinal anesthesia is due to abolition of an inhibition of bowel movements brought about by laparotomy or other physiologic "insults"; hence probably the paralytic ileus is essentially reflex in nature, and the chemical changes that have been described in the blood are the result and not the cause of the ileus. Markowitz and Campbell conclude that paralytic ileus as encountered in the clinic must be of the nature of reflex inhibition, dependent on the integrity of the reflex arc. Such a conception, they add, implies that the paralysis of the bowel movements observed at laparotomy is a physiologic ileus which, if unrelieved or augmented by other irritant stimuli, merges into paralytic ileus.

THE CHEMICAL NATURE OF CHARCOT'S CRYSTALS

The designation of Charcot's crystals, sometimes also termed Charcot-Leyden or Charcot-Neumann crystals, has been applied to a substance observed in striking crystalline form in certain tissues and their derivatives. They were first recognized in 1853 by Charcot and Robin in the spleen of a patient who had suffered from leukemia. Subsequently Leyden discovered crystals of a similar description in the sputum of asthmatic patients and regarded them as of possible diagnostic value. For the most part the Charcot crystals have either been omitted or continued to represent mere biochemical curiosities in the textbooks of medicine. Böttcher had suggested as early as 1865 that the structures are comparable with the crystals that sometimes bear his name but are usually referred to as spermine crystals. The chemical identity of spermine has now been definitely established and the artificial synthesis of the compound accomplished. In a recent review of this contribution,[4] doubt was cast on the alleged similarity of the Charcot-Leyden crystals and those of spermine phosphate. Apparently, however, the identity has now been made highly probable by German investigators [5] at the University of Greifswald. Thus another item long recognized merely as a name in the literature of the medical sciences has become a well defined chemical entity.

2. Markowitz, Jacob; and Campbell, W. R.: The Relief of Experimental Ileus by Spinal Anesthesia, Am. J. Physiol. **81**: 101 (June) 1927.
3. Wagner, C. A.: Arch. f. Gynäk. **192**: 336, 1922. Asteriades, T.: Presse méd. **33**: 1480 (Nov. 1) 1925.
4. The Synthesis of Spermine, editorial, J. A. M. A. **88**: 484 (Feb. 12) 1927.
5. Wrede, F.; Boldt, F., and Buch, E.: Ueber die Natur der Charcot-Leyden-Böttcher-Neumann-Krystalle, Ztschr. f. physiol. Chem. **165**: 155 (March 31) 1927.

Training in Desirable Habits.—Only if the individual is habituated, exercised, practiced in good ends so as to be incapable of really knowing how and why they are good, will he be capable of knowing the good when he is mature. Pleasure in right ends and pain in wrong must operate as a motive force in order to give experiences of the good before knowledge can be attained and operate as the motive force.—Dewey and Tufts: Ethics, p. 216.

Association News

CONFERENCE ON PUBLIC HEALTH

Held in Chicago, March 24-25, 1927

(Continued from page 37)

MARCH 24—AFTERNOON (Continued)

Public Health Education with Especial Reference to the Use of the Printed Page

DR. MATTHIAS NICOLL, Commissioner of Health, State Department of Health, Albany, N. Y.: If my remarks seem to apply too closely to my own state of New York, it is not for the reason that I believe New York State to hold a monopoly of knowledge regarding methods of public health education, but because I am more familiar with our own methods than those of others. Our printing bill last year was about $60,000, and if salaries and traveling expenses are included, the total makes up a good share of our budget. There are very few accomplished public health educators in this country or elsewhere, and it is seldom that a state or city possesses an educator who can handle the whole business alone. It is a wise procedure to interest all members of the staff in public health education, encouraging them to present ideas and furnish articles and items of public health interest, from whatever source, for publication in the official bulletin, or for use in addresses or articles on public health. A person furnishing such ideas should be kept track of and encouraged. In other words, understudies and assistants to the director of the division of public health education, if there is one, should be zealously sought for and tried out. In a large department, innumerable items of this kind are consigned to the general files and do not see the light of day until, months or years afterward, they are unearthed and found interesting but too stale to be applicable.

Up to three years ago, the official bulletin of the state department of health was issued as a monthly periodical and had attained quite a respectable age in years. It consisted largely of articles by authorities in various branches of the medical sciences, usually rather technical in character, and not infrequently somewhat too weighty for popular appeal. I fear all too frequently that it was stamped and confined to the library files or ignominiously filed in the scrap basket. About three years ago we began the publication of a weekly bulletin, the *Health News*. From the first it has been a phenomenal success, and the demand for it, not only throughout this country but from many foreign countries, is far greater than the supply. In addition to live news items regarding the health of the state, the bulletin serves as a medium for official orders to the staff, the health officers and the nurses of the state, outside the city of New York. The cost per weekly issue is $145 on a basis of 12,000 copies, and the total annual cost, irrespective of overhead, is $7,540. In this year's budget, the appropriation for the *News* was increased to $11,000, which will enable us to issue 20,000 copies a week. I know of no other state, except California, that is now publishing a weekly bulletin, and that bulletin is made up largely of statistical material. I cannot urge too strongly on those states and large cities which can afford it to publish weekly bulletins of current health events. They serve to keep the health administration "on the map" and to interest a large number of people in what is being done for the benefit of their health and welfare.

While radio talks do not come under the head of the present discussion, I believe that well thought-out topics of current interest in public health, broadcast by radio, at a definite hour each week, are of immense service, especially in the rural districts. Such talks have been given by the state department of health of New York each week to the number of about 257 and, in addition, a mimeographed copy of the "talk" is sent to 147 daily and 472 weekly papers throughout the state. It is found that 70 per cent of the former and 40 per cent of the latter publish these "talks" regularly. This service costs practically nothing and is worth more than the effort to furnish new topics for broadcasting. With the air, as it is at present, so cluttered up

with conversation on every conceivable subject, including unsound and even false medical theories and the yawps of charlatans and quacks, antivaccinationists and chiropractors, it is probable that legitimate medical messages will be crowded out or found to be in such bad company that they will be withdrawn; but until that time arrives, it is my opinion that this form of public health education should be continued.

I believe that the so-called boiler plate form of public health education has been pretty well abandoned throughout the country. It was found by us to be an expensive and unsatisfactory service, especially for the reason that it was impossible to control the time of publication of the series of articles that were sent out in this form. It was not popular with the larger newspapers, which preferred to do their own writing, and frequently resented by the smaller ones, which felt that they were being imposed on by giving free advertising space.

Close contact with representatives of the daily press is a valuable adjunct in getting out frequent news releases, and for this purpose it is extremely important that some one in a health department should have acquired news sense, and be as familiar as possible with the peculiar psychology of newspaper men, which it is not always easy to grasp. How frequently does it happen that a news item which we regard of very little interest is pronounced to be "great stuff" by the brethren of the press; and, conversely, what we may regard as a wonderful piece of news and hopefully look for the next day fails to appear. There can be no question that the story is frequently lost for the reason that the facts were not presented with due regard for newspaper technic.

The division of maternity, infancy and child hygiene, and that of social hygiene have their own special methods of publicity. The former, shortly after the receipt of a marriage certificate, sends out a pamphlet of instructions to prospective mothers. About 30,000 of these go out annually. This is a popular service, especially in the rural districts, where the advice of a physician is not readily available and prenatal care by no means all that it should be. Baby books are distributed to the 1,300 registrars of the state, and by them sent to each mother on the receipt of a birth certificate. These books are technically correct, readable and much in demand. The director of the division of social hygiene sends out, four or five times a year, a typewritten pamphlet on venereal disease and subjects relating to sex to a specially selected group, making up about 15,000 persons. In the group are included the Y. M. C. A.'s, Y. W. C. A.'s school teachers, scout organizations, and churches. The department also publishes many pamphlets on a great variety of subjects dealing with public health. These are sent free on application.

Posters are certainly of value in an intensive campaign of short duration and carried on for a definite purpose. But posters retained and exhibited for an indefinite time, largely for their artistic value, are to my mind of very limited use. Furthermore, I believe that the artistry expended on a poster should never subordinate the definite message that it carries. A poster should appeal to the common sense of the public by setting forth, in concise and catchy phrases, advice which it is desired to have followed. Pictures of pretty babies and adoring mothers may be useful for decorative purposes, but they seldom, I believe, lead to the wide adoption of preventive measures against disease. Before closing, I desire to pay my respects to and express my admiration for the editor and author of the best public health publication which comes across my desk, that of the city of Chicago. Dr. Bundesen's bulletins are always attractive, witty and full of common sense, well printed on good paper and, on the whole, models of public health pamphlets.

MR. EVART G. ROUTZAHN, Russell Sage Foundation, New York: Not long ago I gathered a few figures as to the circulation of health printed matter. At that time I found that in one year more than 10,000,000 pieces of educational printed matter were purchased of the Division of Venereal Diseases of the United States Public Health Service or reprinted by the states, and the cumulative volume of health literature distributed by the Metropolitan Life Insurance Company considerably exceeded 400,000,000 pieces. In other instances from one million to six million copies of a leaflet or folder were issued by a national organization. Probably the quantity of health printed matter issued by national organizations is equalled by the state and local departments and associations. A considerable proportion of what is distributed is not read and another larger section of it, although it is read, does not lead to action.

Our educational material, especially that part of it which is printed, can be made much more effective. As the means to this end I would suggest: 1. More general use of *accepted* principles, technics and forms of skill adapted to our needs. I refer especially to the technic of printing principles of psychology, and facility in writing in everyday language. 2. Employment of persons to do the work of health education who are trained to do it; and this means that we must first offer training. 3. Revision of the methods of supervision and the working conditions under which preparation of health education material is carried on. 4. A philosophy and a program for the health education work of official and private agencies. Both of these elements are lacking in the work of many agencies. 5. Recognition of the time and thought that are necessary in producing publicity material that gets results. Comfortable reading demands type of a minimum size of 10 point, unless very short lines are used (from 2 to 2½ inches); an "open" page, obtained by space between lines and wide margins, is as important as type size; there should be a strong contrast in color between paper and type; lower case letters are easier to read than capitals; shiny paper is not so easy to look at as dull finish paper. Well planned, designed and printed text on a good and suitable grade of paper may cost little more than many jobs that look even cheaper than they are.

It is sound practice to seek to get the attention of the reader by talking about something that already interests him; to begin where he is and lead him from there to what one wants him to become interested in; a concrete example gets attention more easily than a generalization; specific words, such as toothbrush and carrots, are more quickly understood than broad terms, such as care of the teeth and wholesome food; people follow advice most readily when it is made easy for them, and so on. Perhaps the most important contribution of the psychologist is in the development of methods of testing the relative attention value of this or that color or form of copy, of finding out in advance what is the strength of a particular appeal and so on. Advertising practice can give us a few lessons in the application of psychology to influencing behavior, but in most cases experience in this field must be translated and modified to meet our conditions and limitations. One difficulty in applying the experience of commercial advertisers directly to our work is that advertising usually relates to a single concrete object. An example of a health education campaign with an objective almost as simple and direct as that of selling tooth paste or yeast is that for vaccination against smallpox or diphtheria.

Those who give health instruction frequently do not talk a language that the people most in need of this instruction can understand, and consequently thousands of lives that might be saved are lost annually. The person who prepares publicity needs imagination and an understanding of people. He also needs to keep up with current facilities and ideas for making printed matter attractive and getting it into use. All of this implies the employment of a special worker for the job of health education and publicity. At least, it calls for a generous time allowance for a person assigned to the task.

To consider the resources most immediately available there is the education and publicity section of the American Public Health Association, which conducts meetings each year of a very practical kind and also has a department of methods in the *American Journal of Public Health*. Here are other suggestions: Read a book on the subject or two or three of them. The Russell Sage Foundation has a reading list on publicity methods. Go through the files of the *American Journal of Public Health* for the past three or four years. Subscribe to the *News Bulletin* of the Committee on Publicity Methods. Especially call in one or more consultants, including a good printer and some one who issues good printed matter. Seek opportunities for talking over your printed matter informally without reference to a particular printing

job. Seek criticism and advice based on what you have already had printed. Invite criticism of your copy from newspaper men and other writers. Ask them to go over it and offer suggestions before it is set up in type. Arrange several dinner or evening conferences with the local group of health workers in which the printed matter of those present shall be discussed—with examples in the hands of all present. Probably at one of these conferences have a good designer of printing present who will criticize each piece in turn, pointing out what he thinks is good practice and what he thinks could be improved. At another time ask a writer to do the same thing with the copy. It may be possible to find an illustrator, a photographer, an engraver to come in for such a discussion.

Organizations that employ educational secretaries pick them up here and there and they learn the work by doing it —some of them very successfully, too. If the worker is to be trained on the job, it seems to me that there are several ways to help him succeed. It is especially important, as has been said, that the publicity secretary should know people and know something of the circumstances under which they will receive the material he is turning out. The publicity worker should be free to leave the office, walk the streets, look at the people or the shop windows, even go to a vaudeville or motion picture show. Study and conference with others in the same work are of special importance to the publicity worker.

Another matter that counts in getting the best work from a publicity assistant is the nature of the supervision given to his work. Better by far that there be some errors of judgment or of skill than that the creative spirit be submerged under the effort to get by. In urging greater freedom for the writer I am assuming that he brings some ability, judgment and experience to the work.

The $1,800 recommended several years ago for a young man or young woman with a variety of training and skill will not draw that type of worker into public health work, because of larger salaries and better opportunities offered elsewhere.

Have we a philosophy? Few seem to be thinking of what persons to reach and how best to reach them, and what they actually wish these persons to do about it. An analysis of the whole problem before printed matter is prepared would sometimes result in a decision not to prepare any, or to prepare something especially for industrial workers or farmers or housewives instead of for the so-called general public.

Through a cooperative effort by some of those here it would be possible to try out a plan of obtaining high grade service in designing folders that can be printed by local printers with the necessary changes required to make the material adaptable to local use. The procedure might be as follows: 1. Appoint a committee, or put it up to the American Public Health Association or National Health Council to appoint one. Let the committee select one or several sizes for a series of leaflets or folders for a particular use. Let them engage a specialist to prepare a layout, including paper, color, type faces and sizes, etc., for an approximate amount of copy, the general outlines of which will be supplied. 2. Another possibility would be to select the basic facts and ideas which should be presented to a particular audience for a particular purpose. Indicate the more important facts and ideas in this material. Check the material for its soundness from the public health point of view. Engage high grade people to write and illustrate the copy. Supply proofs or plates to those who wish to do their own printing. Accept orders for an initial edition.

An average of $5 or less each from the departments and associations represented here would provide several examples of the suggested layout service—type, paper, ink, etc.—with proof copies supplied so that the possibilities could be studied and applied to your own printing by your state or local printers. A test of the copy plan could be made on a similarly modest scale. After plenty of time to study and experiment with these examples there could be discussion of what next to undertake if the idea proved acceptable to a reasonable proportion of those concerned. After further use of the plan a way might be found to provide a revolving fund to finance the project whether or not it was decided that the service should be made self-supporting. This kind of service is so concrete, and its advantages can be illustrated so easily, that it seems probable that departments could secure gifts from interested people to cover their shares in the expense where it would be impossible to use official funds. Is it not possible that the private associations could likewise get special contributions for such services?

DR. MORRIS FISHBEIN, Editor, THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and *Hygeia*, Chicago: The newspaper is the greatest medium for medical education of the public. Practically all other methods of education reach their largest audiences through the press. Unfortunately, material for publication in the press has to be put in a diction that will be understandable by a person about 14 years of age. The language must be according to the simple old adage "Tell it to Sweeney; the Stuyvesants will understand."

The chief difficulty in securing proper publicity for medicine and for health in American newspapers is the fact that there are as many as five hundred organizations in the health field attempting to secure publicity at the same time, and that individual newspaper editors and newspaper syndicates are also promoting this type of material. Today there is hardly a newspaper of repute in the United States that will take medical advertising matter without checking up its authenticity with the officers of the medical society in the community, or without telegraphing to the headquarters' office of the American Medical Association to find out the real value of the material. Today promoters of nostrums, of cures for cancer, tuberculosis or anemia, or foods or drinks alleged to have special virtues in promoting health secure their victims by a more modern method. The concern hires a publicity counselor and pays him a salary based on the amount of free publicity that he can get for his product in the newspapers. A high priced publicity agent who can get the product on the first page a certain number of times a week will do much more for his concern than could be accomplished by the purchase of advertising space.

The public is interested primarily in things that can be dramatized for them, and the greatest element of drama is conflict. Such battles fought in the public forum as the Rhinelander affair, the Snyder trial and the Hall-Mills case attract millions of readers. Medicine, too, has its tremendous conflicts, and when they are sufficiently dramatized they accomplish much for health education and the benefit of the public. The health educator who knows how to take advantage of such a news feature for the education of the public, and who is able to recognize the drama inherent in such an event, will accomplish much for the benefit of his readers.

Much of the health education conveyed to the public today is given by means of the newspaper health column. The first of these has been before the public less than a score of years. Today about fifteen such columns are syndicated through many newspapers. Some of them represent the highest type of medical education. They are cautious in their announcement of new discoveries and in the status of new medical work. Sometimes these columnists promote individual notions without giving their public a clear understanding that these are notions and not established medical facts. A few of these columns, however, are vicious in the promulgation of "patent medicine" advertising or preposterous health advice.

It is difficult for the public to distinguish between newspaper material promoted with altruism and that issued primarily for personal gain. Never a week goes by without a telegram from newspapers and from press associations all over the United States coming to the headquarters office of the American Medical Association, and asking for immediate advice on medical news. The headquarters office is able to provide replies because study has been made of the way in which the newspapers work. The newspaperman's chief diet is news—news is material that must be published immediately. Through the various departments of the Association, information concerning any new discovery in medical science or in the field of quackery is promptly available. In the Bureau of Investigation is a file of more than 125,000 cards cross-indexing every type of quackery and every person who has been engaged in quackery in the United States for many years. In its biographic department is the record of every

physician in the United States from the moment he enters medical college until he dies, and the card is left for twenty years after that. In association with this is a biographic file in which are kept newspaper clippings concerning physicians that have come into the headquarters office through the clipping bureaus covering every portion of the United States. Finally, the American Medical Association prepares and publishes a periodical known as the *Quarterly Cumulative Index Medicus*, in which appears reference to every article appearing in any scientific publication, indexed by the subject and by the author's name. When a telegram is received from any newspaper regarding any medical discovery, it is possible to locate immediately the scientific article on which the announcement may be based, reference to all the previous work of the investigator, and a statement as to his position in medical school, research institution or other organization. Such information is invaluable in determining the authenticity of any medical item. Moreover, connections have been established in all the great medical centers of the world so that information can be had immediately by telegram or by long distance telephone, when it is required promptly for an important purpose.

Such syndicate services as the Associated Press, the Newspaper Enterprise Association, and Science Service constantly check medical news material through the American Medical Association in order to be assured of its authenticity.

More and more newspapers are asking for medical help in the preparation of considerations of special topics. Such a series as that appearing in the New York *Herald Tribune*, covering the craze for reduction in weight, is a response to this request. But not all newspapers are equally careful in the checking of scientific material. Recently, in the Sunday issue of one of the Chicago newspapers appeared an announcement that a physician had been arrested under a warrant that accused him of unethical conduct and of malpractice. In the same issue was a feature article as to the remarkable results secured by this physician in reducing the weight of some aged actress by the wholesale removal of fat from those portions of her anatomy where it was most abundant. The feature article was an advertisement, but it was not labeled, according to the government regulations, with the significant letters "adv." at the end. It appeared, instead, as a portion of the magazine section of the paper. It is well known that such magazine sections may be printed some time in advance of the news sections, but the questionable character of the publicity for the physician concerned was not in any sense of the word a new question.

It is well known that feature articles are manufactured to fit special occasions, and their development frequently represents the work of weeks or of months. In many instances, such feature articles are written by men noted for their contributions to medical education of the public. The medical writer who respects the ethics of his profession will not build a feature article merely for the opportunity of selling it, but will limit himself to such matters as constitute actual education. It is a simple matter to exploit the half-baked discovery of some enthusiastic medical investigator as an achievement. It is a far more difficult matter to prepare in a form that is interesting and instructive to any lay reader the scientific developments that are on a thorough basis and that constitute established medical knowledge.

The medical profession today is attempting to form some organized method for supplying newspapers with material and yet preventing injustice through the overadvertisement of individual physicians, and through the furnishing of details concerning the personal lives of patients which the public should not have. The medical education of the public is the one certain method of overcoming the evils of quackery, of cultism, and of medical fraud.

PRESIDENT PHILLIPS: I feel that I should state the reason why I am obliged to withdraw at this time. Just before I left New York news came to me of the death of a very dear brother, and I can only reach his home to attend his funeral by leaving at this time.

Dr. E. B. Heckel, chairman of the Board of Trustees of the American Medical Association, took the Chair.

DISCUSSION ON PAPERS OF DR. NICOLL, MR. ROUTZAHN AND DR. FISHBEIN

MRS. W. B. MALONEY, Editor, New York *Herald Tribune* Magazine, New York: For a great many years I have believed that the people who knew committed a cardinal sin by not giving their knowledge to the world. I believe that knowledge is without influence until it is given to the public. It is without power until the public accepts it. You can only make the public accept it by using all the agencies which reach the people, and chief among these is the daily press. Seven million dollars worth of newspaper is used every Sunday in the United States, and I do not believe the public health work receives its full share of that $7,000,000. It is necessary to teach the scientific man and the highly professional groups how to reach the public. The editor is not entirely to blame. In my time, which has been a long time, I have seen newspapers break down their prejudices against health news. I have seen a cancer item printed on the first page of a newspaper. Ten years ago you couldn't get any newspaper to publish the fact that anybody in the world had died of cancer. The rule of most newspapers was never to use the word; it is still a rule in some offices never to use it on the first page; it is also the rule with some monthly magazines. That has been largely overcome. Something has been said today about preventive medicine without cost; curative medicine at cost. I happen to have had to work my way through college because my father was a doctor who didn't collect his bills. I think most doctors have large non-paying practice. I have known Dr. Wood to work all night long on somebody who didn't have a dollar in the world. I have known Dr. Brooks to forego a $500 consultation fee in order to attend a man who didn't have a penny to pay him. I think that if there is any purpose in this meeting at all, it is to wipe out all those little prejudices, those little feelings that give us patent leather hides. There is too much work to be done; nobody has any time to be personal. Editors are sometimes wrong and they can stand being corrected; doctors are wrong sometimes and they must be willing to be told so. That also applies to public health workers and social workers. Recently, with the aid of the American Medical Association, I put through a campaign to educate the public on "girth" control. I did that because it was possible by putting out the article to get 20,000 letters from women who wanted to know if they could live on lamb chops and grapefruit. There were no means of proper scientific control and education until the newspapers were used by the people who had the accurate information to give. It has been a very difficult thing to make some of the professional people believe that it is a legitimate thing to do. It is not only legitimate but an obligation, if you really believe in preventive medicine or curative medicine.

DR. JAMES A. TOBEY, New York: The suggestion made by Mr. Routzahn for a committee to attempt to set specifications and standards seems to me well meriting a serious follow-up. Five years or so ago the *American Journal of Public Health* carried a significant editorial entitled "Pamphleteering and Public Health," in which an endeavor was made to show there were somewhat too many pamphlets in this field. The United States government alone has between 1,200 and 1,500 separate and distinct pamphlets on public health subjects. If you want to know about milk you can get literature on this topic from the United States Public Health Service, the Department of Agriculture, the United States Children's Bureau or the United States Bureau of Education, and you can obtain many different pamphlets on that subject, and this fact is also true of other subjects. When you go outside of the national government and approach the voluntary agencies, or the states and the cities, it almost staggers comprehension to learn how many pamphlets there are. I strongly advocate that this unduly copious supply be reduced and standardized. As Dr. Fishbein has well said, more attention should be given to newspaper publicity, which, after all, is by far the best type in public health work.

DR. HERMAN N. BUNDESEN, Health Commissioner, Chicago: I feel that probably one of the greatest single successes of the Chicago department of health has been the issuance of health literature in a way really to reach the people. Dr. Nicoll wanted to know how much we spent last year for publicity in the department of health of Chicago. The bill for bulletins and

publications alone was $146,000. Several speakers here have said that their health department appropriations are only $10,000 or $12,000. I might say that the appropriation for the health literature last year in Chicago was $6,250. We had to raise the $140,000 outside the health department. All our large publications have passed through the hands of Dr. Fishbein of the American Medical Association, and have been censored as to their accuracy. The matter of raising the money by subscription isn't a hard job when one gets the confidence of the people. We got out the baby book, of which there have now been issued a little over 5,000,000 copies in eighteen months. We also got out a booklet on prenatal care. This publication has been able to reach more than 100,000 mothers in the city. We try to distribute the book to every pregnant woman. It is a seventy-two page booklet on the subject "Before the Baby Comes." To print that booklet cost something like $17,500 for the first 100,000 copies. Samuel Insull is a great public utility advertising genius. Insull, William Wrigley, John R. Thompson, John Hertz, the Yellow Taxi man, and people of that kind are the ones who have financed all our publications. We are absolutely convinced it pays to advertise, no matter what commodity is advertised. Why did they sell so much Peruna? Because there was any value to it? Why did they sell so many Lydia Pinkham's pink pills? Why do they sell millions of dollars worth of the food Postum Cereal? Who doesn't want red cheeks? Who doesn't want sparkling eyes? How are they going to get information about these things? From the breakfast food manufacturers until health officers use better tactics to put over health information in the same way,—the way the public needs it. People are interested in just that kind of publicity. It may not work in other places, but it was worked in the city of Chicago. From a publicity point of view we have been able to sell health to the people not only in booklets, but also through the newspapers. The newspapers have been very kind to the Chicago department of health.

The point I am driving at is that you can sell public health. I have been asked what I thought made the bulletin of the health department popular. Who writes it? I write that bulletin myself, and not one issue ever goes out that isn't read to Laura Belle, one of my six youngsters. When she gets something she doesn't understand, we try to rephrase it in language she can understand. This puts it over with the great mass of people. Maybe people do not lack intelligence, but who wants to come home, tired out, and read a lot of small type? Nobody likes to do that. Public health can be sold just as anything else can be sold. The methods are those of the men who are writing advertisements, who are being paid fabulous sums to write ads that put things over. If any of you are not getting the bulletin of the Chicago Department of Health we will be glad to send it to you. If you will look over the illustrations you will see that every one of them, or at least the vast majority, are based on some ads; that is, the ideas are based on ads. I think that you also can sell public health. But it must be sold in a simple way. I think that some of the finest literature in respect to simplicity is the magazine *Hygeia*. If we could get *Hygeia* into every home in Chicago we wouldn't have to worry about cancer fakes or various quackeries. The thing that we must do is to give the people the material in a way so that they will take it, and the way to do that for the general public at large is by simple language, well illustrated. Ask the people who are editing the bulletins whether they are editing it for the doctors or the lay people. Build up the bulletin to the group that you are trying to reach. We in Chicago are trying to build up our bulletin to educate the people of the city. I might say there is hardly a week, hardly a Monday morning, when our bulletin is released that all the five newspapers don't carry from a quarter of a column to a whole column of health matter. When you can get a circulation of millions then you can do something.

MARCH 25

CHAIRMAN HECKEL: One paper which should have been presented yesterday we will be glad to listen to now.

Relation of Voluntary Health Agency to Physicians and Health Departments

DR. LINSLY R. WILLIAMS, New York.

This paper is published in full in this issue of THE JOURNAL.

DISCUSSION

DR. GEORGE M. FISHER, President, Medical Society of the State of New York, Utica, N. Y.: I am going to offer a resolution:

WHEREAS, It is the common idea of all physicians that the health organizations and physicians should work together; therefore be it

Resolved, That the American Medical Association be requested (we can't say what they will do because they are an independent organization) to appoint a committee to work in conjunction with said committee from lay organizations and report at one of their annual sessions, probably next year.

I make that motion and resolution.

DR. OLIN WEST, Secretary and General Manager of the American Medical Association, Chicago: When invitations were forwarded to those who are participating in this conference, the statement was positively and definitely made that there would be no voting on any sort of a proposition.

CHAIRMAN HECKEL: The Chair would like to state that the Board of Trustees of the American Medical Association has a standing committee that is always ready to consider any proposition by any organization to the American Medical Association. The standing committee first considers the proposition, whatever it may be, and then it is referred to the Board of Trustees, which takes the final action.

DR. GEORGE FISHER: I would request that that resolution be referred to the Board of Trustees. Is that right, Dr. West?

SECRETARY WEST: I think the Board of Trustees will be very glad to consider it, Dr. Fisher.

The motion was seconded, put to a vote and carried.

DR. W. S. LEATHERS, Professor of Preventive Medicine, Vanderbilt University School of Medicine, Nashville, Tenn.: I believe that mistakes are being made by certain voluntary agencies, and this is largely due to the fact that the principles which Dr. Williams enunciates are not being observed. Much improvement has occurred in recent years in effecting a better understanding between official and voluntary agencies and the medical profession, but there is still need for continued consideration of this matter. It is my purpose to relate an experience which seems to me better to illustrate what I mean than by discussing in an abstract way the problems involved. In the state from which I come, a fight is on for the establishment of a sanatorium for the care and treatment of tuberculous persons. About two years ago the legislature passed a law requesting the governor to appoint a commission to study the control of tuberculosis in Tennessee and make recommendations with reference to it to the legislature two years hence. This commission is composed of eleven persons. The state health officer is chairman. It is felt by the commission at this time that it would be a mistake to appropriate money for a sanatorium. The secretary of the Tennessee Tuberculosis Association prepared a bill which was introduced into the legislature asking that about one-half million dollars be appropriated for the building of three sanatoriums in the respective subdivisions of the state. This bill was drafted without the knowledge of the state health commissioner and introduced into the legislature without conference with him. Obviously, this procedure was calculated to weaken the administrative position of the state health officer in projecting a program which in his judgment is wise and proper. A representative of the National Tuberculosis Association has been active in promoting the campaign for the establishment of a state sanatorium. In view of the fact that the commission for tuberculosis control, of which the commissioner of health is chairman, does not favor at this time sanatorium development, this has the effect of opposing the program of the state department of health. While it may not be the intention of most of those interested in the sanatorium to weaken the administrative position of the state health commission, it will without question have that effect in the event that the advocates of the sanatorium are successful. When it is maintained before the citizens of a state that the plan or policy of a state health department is not sound, especially when it concerns a big problem, as providing institutional care for the tuberculous, it can only result detrimentally to the interests of the official health agency. It appears to me that an agency which pursues a course that is antagonistic to the policy of the state health

department, in view of the circumstances related, is following an unsound procedure. It is not good from the standpoint of public health administration or from the standpoint of the medical profession. I may say that the State Medical Association of Tennessee, through its secretary, supported the program advocated by the tuberculosis commission, and a large percentage of the physicians of Tennessee are behind and in accord with the policy. I believe that a voluntary agency which has its headquarters in a distant city and is honestly endeavoring to relate its work to local conditions should invariably assume a judicious and constructive attitude with reference to the state or local department of health. It is true that a state tuberculosis association is somewhat autonomous, but the situation has been aggravated by advice and activity at headquarters. The man on the ground can usually handle problems of this kind fairly well if given an opportunity, and any advice or direction that tends to bring about disagreement and discord locally is most unfortunate.

DR. SAMUEL W. WELCH, Chairman, Alabama State Board of Censors and State Health Officer, Montgomery, Ala.: I want to endorse everything that Dr. Leathers has said. The paper which has just been read is sound in theory and in pronouncement. The difficulty is that that line of procedure which has been outlined in the paper is not followed in the rural states. It is not a sound policy for any volunteer agency to formulate a policy outside the state without knowing the conditions that exist in the rural district and undertaking to apply methods applicable to urban life to the rural district without regard to the opinions, the knowledge of the man on the ground in the rural district. We are students of conditions as they are, and after we have worked out our programs, volunteer organizations ought to come in and strengthen our hands and help us develop those programs and help us to grow with our people, make us strong with our own folks. Any agency that interferes with the leadership of the board of health in the state is bad; it is rotten; it is doing a great deal more harm than it is doing good. A voluntary agency ought to realize that its highest obligation is to build permanently a governmental agency and subordinate itself to the leadership of that governmental agency. It is making a serious mistake in the rural districts of this country. I am not discussing urban conditions. I am talking about the rural South and the the rural West.

MR. HOMER FOLKS, State Charities Association, New York: In New York State since 1914, when Dr. Biggs became commissioner, the state health commission has always been the most active and dependable member of the executive committee of the voluntary agency. In all these years we have never appeared in Albany on opposing sides of a question; we have always been together. The general principle and the practice in New York, which I can speak for, is exactly 100 per cent in line with Dr. Welch and Dr. Leathers' suggestions.

SECRETARY WEST: I practiced medicine at one time for about twelve years, and for another twelve years I was engaged in public health work, all in the state of Tennessee. I was health officer of that state for some time. Tennessee is in reality three states. The topographical conditions and many others make it impossible, even if the necessary money were available, to establish and maintain a hospital large enough to make it worth while to undertake to do it. There are many other factors in the situation with which no man outside the state could be familiar. The state health department does know the situation. In the meantime, four fairly efficient county hospitals for the treatment of tuberculosis have been developed in Tennessee. Based on my experience in the state, it is my opinion that the solution of the tuberculosis question will be found in the right kind of field work, the maintenance of proper educational work, and in the establishment, when feasible, of county or district hospitals. I believe that the state board of health's position in this matter is right. I believe for a volunteer agency, even though it maintains representation in the state, to undertake to foster another program than that which has been decided on by the official agency, with the advice and counsel of a commission composed of some of the best citizens of the state, is bound to be harmful. I believe that with respect to public health work the whole thing is an educational process. We are dealing with problems beset with difficulties that are established by the inherent, inherited and fundamental ignorance, superstition and lack of knowledge on the part of the people, even the best of them. There has been too much hurry, too much hurrah, and sometimes too much stuff has been put on paper that couldn't be demonstrated as being accomplished fact. Another conviction I have is that any demonstration or any sort of an activity undertaken by a health department official, volunteer or anything else, that destroys the confidence of the public in its official agencies, if those official agencies are honestly striving to do their duty, have a definite program outlined and are working at it, does more harm than good. I believe that any demonstration that goes into a community, no matter who puts it on, that destroys the confidence of the community in its own medical profession does more harm than good. I believe that a demonstration in a community that costs much more money than that community is able to provide, or that the community cannot take hold of and carry out after the demonstration is gone, and those that have the money are gone, does more harm than good. No public health movement of any kind is going to succeed, finally and definitely, that does not take the medical profession into the confidence of its promoters and does not make the medical profession an element of first consideration. If the profession is slow to take hold, if the profession is incompetent, then the job to be done is to build up the right sort of sentiment in the medical profession and among the public. It can be done. My judgment is that the medical profession as a whole is just as much interested in promoting public health as anybody, just as willing to carry its end of the load, and a little bit more than anybody else is willing to do. But they are not willing to take hold of a thing and run away with it, nor to be taken hold of and run away with. If it takes longer to do the job, take longer to do it, and get more permanent results.

DR. LINSLY R. WILLIAMS, National Tuberculosis Association, New York: It is quite clear that the health department and the health officer should take the leadership in all types of health work. A certain number of health officers of states come to me and say, "Why don't you fire your agent out there?" Our state associations are entirely autonomous; they are self-perpetuating bodies with boards of directors elected by membership, and their boards of directors choose the executive officer. I have nothing to do with his selection. It is true that it is possible to bring a great deal of pressure to bear to see that a secretary is removed, but only under grave situations. These relationships almost always get down to the personality of two individuals. I haven't been able to solve certain differences. I have urged a number of secretaries to resign, but they have told me they were going to fight it out. I can't fire them. The voluntary agency should aid in promoting the activities of the state health departments. I am wholly in accord in the question of always being subordinate to the health official. I believe that they would be subordinate if the health officer always took the leadership, if the health officer were always an important member of the executive committee of the voluntary agency. If a little more effort is made by health officials to secure the support of the voluntary agency, we can go a bit further. But any group of individuals has the right to criticize a governmental authority. I think I have sensed in one or two health officials a feeling that they are above criticism or suggestion. On the other hand, we get a great deal more progress by sitting down at the same table and talking things over. Let's have more frequent conferences. Let us agree so far as we can, let us compromise, and try to push on the work together. The question has been raised that we should not go forward with health activities unless we know that we can receive the financial support from them. A great many of us have been seeking in vain to find out how much a given community can afford to pay for health work. Some of the counties have recently put forward a little slogan for their health campaign, "Give us a mile of road" when they were putting in several hundred miles in the country. They can afford the hundred miles of road, but they can't afford a decent little health department for a county. I should like to know what the formula is as to how much the people can pay.

(To be continued)

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Bills Introduced.—Senate bill No. 170 would authorize and regulate the practice of chiropractic, and provide for establishing a board of chiropractic examiners. Senate bill No. 256 and house bill No. 467 repeal the sections of the code relative to the reports of births and deaths by physicians and midwives. House bill No. 395 would repeal the workmen's compensation act.

CALIFORNIA

Placement Bureau.—The placement bureau maintained in the office of the secretary of the California Medical Association, San Francisco, during 1926, successfully placed thirty-five physicians and ten nurses and stenographers.

Changes in Health Officers.—Dr. Frank G. Crandall has been appointed health officer of Santa Barbara County; Dr. Benjamin F. Saylor has succeeded Dr. Earnest Dozier as health officer of Shasta County, and Dr. Richard Stewart Hiatt has been appointed city health officer of Ceres.

University News.—Thirty-seven graduates in medicine enrolled for the summer course in the University of California Medical School, San Francisco, which opened, June 6, and closed, July 2; twenty-one were from California, four from Idaho, three each from Washington and Oregon; two each from Utah and Arizona, and one each from New Mexico and Nevada.——The National Research Council, New York, has awarded a grant of $15,880 to the University of California to support investigations being made by Dr. Herbert M. Evans, chairman, department of anatomy, with particular reference to the relation of nutrition to fertility and the relation of the endocrine glands.

Society News.—Dr. Harry Spiro, San Francisco, addressed the San Joaquin County Medical Society, June 2, on "Heart Disease."——Dr. John V. Barrow, Los Angeles, addressed the San Diego County Medical Society, June 14, on "Morbid Changes in Amebeans."——The San Bernardino County Medical Society conducted a symposium on common infections of the upper respiratory tract, May 3; the speakers were Drs. Lenore D. Campbell, Gayle G. Moseley, Charles A. Wylie William W. Savage, Carlos G. Hilliard and Kenneth L. Dole. ——The Los Angeles Orthopedic Club was host to members of the American Orthopedic Association during the annual meeting in Yosemite Valley, June 13-17, housing the entire party at the Huntington Hotel as their guests; there was a dry clinic, Friday afternoon, June 10; a banquet, Friday evening; a trip to Hollywood, Saturday morning, and a luncheon, Saturday evening before the party left for Camp Curry. The party went to San Francisco the following Friday night, where a dinner was held at the new home of the San Francisco County Medical Society; following a dry clinic, Saturday, there was a sightseeing trip, a dinner in Chinatown and a theater party. The party disbanded, June 19.

CONNECTICUT

Diploma Mill Echoes—Slabotsky, McCubbin and Munch.—Further testimony at the rehearing, in New Haven, of the eleven eclectics whose licenses were revoked as a result of the diploma mill investigation indicated that Dr. Samuel M. McCubbin, formerly secretary-treasurer of the Eclectic Medical University, Kansas City, had issued seven or eight degrees at $10 each to Dr. George Munch, then secretary of the Florida Eclectic Examining Board and now serving in the penitentiary for using the mails to defraud in connection with illegal medical diplomas. McCubbin testified, it is reported, that some of these degrees were honorary while others were not so labeled, and that neither Munch nor those who finally received the degrees ever attended the Eclectic Medical University of Kansas City. Some of the "graduates" of this school later went to Florida to take the state examination before the eclectic board. Dr. Samuel Slabotsky is reported to have testified that he had attended the Eclectic Medical University three years previous to the World War and, on receiving his discharge in 1919 from the army, went to the Kansas City College of Medicine and Surgery after learning that the Eclectic Medical University had closed; before leaving for an embarkation camp in 1917, he received two diplomas from the Eclectic Medical University and these were introduced in evidence at the rehearing. Nothing was brought out in the testimony at this time as to why there should have been two diplomas.

GEORGIA

Personal.—Dr. Stewart R. Roberts has been appointed in charge of the free heart clinic for white patients who are unable to pay at Wesley Memorial Hospital, Atlanta, under the auspices of Emory University School of Medicine.——Dr. Frank K. Boland has been elected president of the University of Georgia Alumni Society.——Dr. Robert F. Wheat, Bainbridge, has been appointed a member of the state board of medical examiners.

Summer Clinics.—Emory University School of Medicine, Atlanta, will offer again, from July 9 to July 23, a series of summer clinics daily except Saturday and Sunday. Work will be in the form of a presentation of cases and of talks on recent aids to diagnosis and the newer forms of treatment in internal medicine, general medicine, gynecology, pediatrics, obstetrics, orthopedics, genito-urinary diseases and diseases of the eye, ear, nose and throat. Clinics will be held at the Wesley Memorial Hospital and the Emory University Division of Grady Hospital on alternate days.

Society News.—Dr. Theodore Toepel, Atlanta, addressed the Fulton County Medical Society, June 2, on "Nutrition and Growth in School Children" and Drs. James E. Paullin, Jr., "Bowcock and Wood" on "Hypertension and Its Complications."——Dr. Joseph Yampolsky, Atlanta, has been elected president of the Georgia Pediatric Society, and Dr. William N. Adkins, Atlanta, secretary.——Dr. Charles J. Jenkins, Edison, was elected president of the second District Medical Society, May 8.——Dr. Frank K. Boland read a paper before the Fulton County Medical Society, Atlanta, June 16, on "Abscess of the Lung"; Dr. Carl C. Aven gave a clinical talk on "Physical Signs in Heart Disease."——Dr. McIntosh M. Burns has been elected a member of the board of education of the city of Atlanta.

ILLINOIS

Fiftieth Anniversary of State Department.—The Illinois State Health Department was organized fifty years ago, July 1. During that period, the life expectancy of the average child born in the state has increased at least fourteen years, according to the editor of *Illinois Health News*, and the expenditures for public health work in Illinois have increased from about $10,000 to $500,000 a year. Another great change in the half century has been the increase in heart disease, which now is ahead of tuberculosis in the mortality column, whereas fifty years ago it was fourth or fifth.

Personal.—Dr. Clarence T. Roome is moving to Santa Barbara, Calif., it is reported, to engage in the practice of medicine; Dr. Roome was health commissioner of Evanston for about fifteen years.——Dr. Harry Olin, St. Louis, has been appointed radiologist to St. Elizabeth's Hospital, Danville, to succeed the late Dr. William H. Miner.——Dr. Walter C. Martini has resigned as medical director and superintendent of the Outlook Tuberculosis Sanatorium, Champaign, and will engage in work at Springfield.——Dr. and Mrs. John S. Allen, Keithsburg, celebrated their golden wedding anniversary, June 21.——Dr. Fred M. F. Meixner, Peoria, has been appointed an examiner of aviators by the U. S. Department of Commerce.

Chicago

Hospital News.—An oil painting of the late Dr. William E. Schroeder, chief of staff of Wesley Memorial Hospital, was unveiled at memorial services at Wesley Hospital in June.

Personal.—Dr. James G. Carr was elected president for the ensuing year of the Alumni Association of Northwestern University Medical School, and Dr. George K. Fenn secretary-treasurer.——Dr. Dallas B. Phemister was elected president for the ensuing year of the Alumni Association of Rush Medical College of the University of Chicago, and Dr. Charles A. Parker, secretary.——Dr. Frank L. Rector gave an address at the fifty-second annual meeting of the Alumni Association of the University of Buffalo, June 8, on "Relation of Industrial Medicine to the Private Practitioner."

Hospital Reorganized.—The president of the board of directors of the Washington Park Hospital writes that the staff and the board of directors of that institution have undergone reorganization, and that the name will be changed

to the Washington Park Community Hospital as soon as the necessary legal steps can be effected. Among the directors now are Prof. Anton J. Carlson, Ph.D., University of Chicago, and Dr. Arthur C. Kleutgen; the other members of the board of directors are business men. Dr. Francis P. Hammond has been made president of the staff and chief of the surgical division, and Dr. Roy R. Jamieson, chairman of the medical section of the staff.

University News.—The total attendance at Rush Medical College (University of Chicago) for the spring quarter was 260, exclusive of those registered for medical instruction in the south side departments.——Subscriptions from 101 contributors for the clinic of internal medicine named in honor of Dr. Frank Billings in the new hospital building on the Midway totaled nearly a quarter of a million dollars, the president of the university announced at the June convocation. An anonymous donor has placed in the hands of President Max Mason the sum of $15,000 for gifts or loans to members of the University of Chicago, active or retired, in times of peculiar need. The University of Chicago has the assurance of funds for an endowment of the departments of obstetrics and gynecology in the new Chicago Lying-in Hospital to be erected at the university; actual operations on this program of development, President Mason said, will be under way by January, 1929.

Dr. Crane Expelled.—The *Bulletin of the Chicago Medical Society*, June 18, reports that Dr. Milo A. Crane of Elmhurst, charged with unethical conduct, has been expelled from membership. Dr. Crane has for some time been advertising in *Physical Culture* an alleged course in "drugless healing" on the correspondence plan, granting "special diplomas" on the completion of the "course." The advertisements appeared under the trade name, "Crane Sanitarium, Department of Schools, Elmhurst, Ill." The Crane Sanitarium was also advertised in *Physical Culture* as being "operated by Drs. Crane and Burkhardt, specialists in obstinate and chronic diseases." Presumably as a drawing card, the advertisement adds that one of these men (it is not clear which) was for "many years house and examining physician for Bernarr Macfadden." According to our records, Milo A. Crane was born in 1874, received his medical diploma in 1907 from the Detroit College of Medicine and Surgery, and was licensed in Michigan the same year, and in Illinois two years later.

INDIANA

Personal.—Dr. Sylvester I. Arthur, Princeton, has been appointed health officer to succeed the late Dr. Robert A. Cushman.——Dr. James Frank Dinnen, Fort Wayne, has been appointed chief surgeon of the Erie Railroad System with headquarters at Cleveland; Dr. Dinnen, for the last ten years, has been assistant chief surgeon of the Nickel Plate Railroad.——Dr. Weir M. Miley, Anderson, has been appointed a member of the board of trustees of the city schools.——Dr. and Mrs. Boston H. B. Grayston, Huntington, celebrated their golden wedding anniversary, June 19.——Dr. Charles H. Keever, Indianapolis, has been appointed coroner of Marion County to succeed Dr. Paul F. Robinson, who was killed in an automobile accident a few days ago.

Another Diploma Mill Exposed.—Following an exposé of the "College of Drugless Physicians" of Indianapolis, by the Indianapolis *News*, Otis J. Briggs, dean of the school, was arrested, June 25, on a charge of conspiracy to commit a felony in connection with the issuance of fraudulent diplomas. Briggs eventually confessed that he had issued twenty-one fraudulent diplomas for doctors of naturopathy. He filed sixteen applications for licenses recently with the state board of medical registration and examination, presenting to the board some diplomas which were dated back so the applicants could be licensed without examination. An amendment to the state medical practice act requires all persons entering practice after Jan. 1, 1927, to pass an examination before being licensed. According to Briggs' confession, the following persons were granted diplomas by the College of Drugless Physicians, March 29, 1927, which diplomas were dated back to Dec. 15, 1926:

Hiram C. Hoskins, 1912 Highland Place, Indianapolis.
H. Smith Dulin, 603 North Senate Avenue, Indianapolis.
Francis G. Cox, 1912 Highland Place, Indianapolis.
Robert O. Pettiford, 603 North Senate Avenue, Indianapolis.
Otto Adams, 603 North Senate Avenue, Indianapolis.
Charles R. Parker, 710 North West Street, Indianapolis.
May Dulin, 603 North Senate Avenue, Indianapolis.
Marie Fleece Morris, Anderson, Ind.

Others to whom Briggs granted diplomas that were dated back were Wilby Gwynn; John Hill, Greenfield, Ind.; Fritz Laderhaus; Henrietta Sing, and a man named Chapman from Huntington, Ind. Briggs' undoing came when a reporter for the Indianapolis *News* applied for enrolment in the "College of Drugless Physicians," June 18. In a few hours, the reporter, Walter A. Shead under the name of Alfred Alonzo Shedd, emerged from Briggs' office with a degree of doctor of naturopathy dated back to Nov. 23, 1926, for which he paid about $110, although he had no medical training whatever. The activities of the College of Drugless Physicians of Indianapolis will be laid before the grand jury which convened, July 5, and a complete investigation of its ramifications probably will be made. Briggs is a chiropractor, it appears, with degrees from various drugless schools. He is the founder and president of the American Drugless Association and from time to time, has been connected with the Central Scientific College, the New Era Physio-Medical College, the American Occult College and the Indiana Chiropractic College.

IOWA

Anesthetists Resign.—Four members of the staff of anesthetists of the State University of Iowa College of Medicine, Iowa City, resigned, July 1, it is reported. Those who resigned were Drs. Louis W. Harding, Elam E. Lashbrook, Mary Ross and Forrest P. Cartwright.

Personal.—Dr. Charles Palen has been appointed president of the staff of Mercy Hospital, Dubuque.——Dr. Grant J. Ross, Sioux City, celebrated his eighty-fifth birthday, recently.——Dr. Arthur L. Bryan has been reelected health officer of Muscatine.——Dr. Henry C. Young, Bloomfield, was elected president of the Des Moines Valley Medical Association at the fifty-fourth annual meeting in Ottumwa, June 21.

Society News.—The Austin Flint-Cedar Valley Medical Society will meet, July 12-13, at Cedar Falls.——Dr. Eleanor M. Hutchinson resigned as president of the Calhoun County Medical Society following her acceptance of a position at the new federal reformatory for women, Washington, D. C.——The Upper Des Moines Medical Society was the guest of the Palo Alto County Medical Society, recently, at Emmetsburg; clinics were held at the Park Hospital Clinic by several physicians from Mason City. Seventeen patients were present, the histories, and physical and laboratory data having been previously prepared by members of the Palo Alto County Medical Society. During the evening, the ladies attended the theater.

KANSAS

Bill Introduced.—House bill No. 738 defines homeopathy, establishes qualifications of homeopaths, and provides for examinations of applicants and the issuance of certificates.

Hospital News.—Dr. Jabez N. Jackson, Kansas City, President of the American Medical Association, gave the address at the dedication of the new building of Christ's Hospital, Topeka, May 30.——The Southwest Protestant Hospital Association is constructing a $50,000 hospital at Dodge City, which, when completed, in about eight months, will be turned over to the Christian Church.

Personal.—Dr. Joseph E. Hawley will celebrate the completion of fifty years in the practice of medicine in Burr Oak, July 11; an invitation is extended to the public, especially the old settlers and the physicians; there will be music by the Burr Oak Band, singing and speeches.——Dr. Frank M. Wiley celebrated the completion of fifty years in the practice of medicine in Fredonia, June 17. The celebration was attended by almost every member of the Wilson County Medical Society.

University News.—The recent legislature appropriated $300,000 for the erection of new buildings for the University of Kansas School of Medicine, Kansas City, $200,000 being for an additional ward unit, and $100,000 for a new nurses' home. A research fellowship for the study of hypertension under the supervision of Dr. Ralph H. Major was recently given to the school of medicine by Eli Lilly and Company, Indianapolis; the fellowship amounts to $1,800 a year, and Mrs. Vera Johnsmeyer Jones has been appointed fellow.

Society News.—Dr. Damon O. Walthall, instructor of pediatrics, University of Kansas School of Medicine, gave a demonstration before the Jackson County Medical Society, recently, on "Scrotal Tumor in the New-Born," and Dr. Joseph B. Cowherd on "Enlarged Thymus in the New-Born."——Dr. Richard L. Sutton, professor of dermatology, University of Kansas School of Medicine, held a clinic for the Pettis County Medical Society, Sedalia, April 21.——Dr. Clinton C. Fuller, Norton, has been appointed head of the full-time health department for Cherokee County, effective, July 1.

KENTUCKY

Personal.—Dr. Judd E. Hammond, Lexington, has been appointed medical examiner for the aeronautics branch of the U. S. Department of Commerce.——Dr. John C. Morrison, Hickman, has been appointed health officer of Paducah, effective, August 1, to succeed Dr. Francis M. Munson, who resigned several months ago.

Graves County Barbecue.—The Graves County Medical Society and the auxiliary held a barbecue at Sedalia, June 16, following which there was a scientific program, comprising addresses by Dr. John H. Shelton, Mayfield, on "Puerperal Eclampsia"; Dr. Frank Boyd, Paducah, on "Fractures," and Drs. Edwin A. Stevens, Harland V. Usher and John F. Kirksey.

Statue of Ephraim McDowell.—The state of Kentucky has selected Dr. Ephraim McDowell as one of the two representatives of the state whose statues are to be placed in the National Hall of Statuary in the Capitol Building, Washington, D. C. Dr. McDowell died in 1830; his grave in Danville is marked with a beautiful shaft provided by the Kentucky State Medical Association. The other statue to be placed in the National Capitol will be that of Henry Clay. The statues will be donated to the state by Mr. Isaac W. Bernheim of Cincinnati.

MARYLAND

Gift for Children's Ward.—Mrs. Henry Barton Jacobs has given $75,000 for a children's unit of the Eudowood Sanatorium which will be for free patients. The two story structure, which will be started soon, will be ready for occupancy in the fall.

Drs. Bloodgood and Baer Appointed Professors.—Dr. Joseph C. Bloodgood, formerly associate professor of clinical surgery, has been appointed professor of clinical surgery at Johns Hopkins University School of Medicine, and Dr. William P. Baer, formerly associate professor of clinical orthopedic surgery, has been appointed professor of clinical orthopedic surgery.

Baltimore's Ambulance Service.—The new ambulance service of the city of Baltimore, placed under the control of the fire department against the advice of the Baltimore City Medical Society and the West Baltimore Medical Society, has been installed and the city divided into five zones, in each of which hospitals have been named to which patients are to be taken. Dr. Frank N. Ogden will supervise the service; twenty firemen have been detailed for duty as orderlies and chauffeurs (THE JOURNAL, May 21, p. 1648; June 4, p. 1819).

MICHIGAN

Personal.—Dr. Walter C. Reineking has been appointed superintendent of Grand View Hospital, Ironwood, to succeed Dr. Merlin H. Draper.——Dr. Theophile Raphael, assistant professor of psychiatry, University of Michigan Medical School, Ann Arbor, has been appointed director of the psychiatric clinic in the Recorder's Court, Detroit, to succeed the late Dr. Arnold L. Jacoby.——Dr. Charles H. Mayo, Rochester, Minn., gave the commencement address at the Detroit College of Medicine and Surgery; his subject was "Changing Medicine."

State Medical Election.—At the annual meeting of the Michigan State Medical Society, Mackinac Island, June 14-17, Dr. Herbert E. Randall, Flint, was elected president; Drs. Colin D. Munro, Jackson, Charles F. Dubois, Alma, Duncan A. Cameron, Alpena, and Abram L. Van Horn, Otsego, vice presidents, and Dr. Carl F. Moll, Flint, was elected delegate to the American Medical Association. Dr. Frederick C. Warnshuis, 1508 Grand Rapids National Bank Building, Grand Rapids, is the secretary-editor. The next annual meeting will be held in Detroit.

Abortionist Heinl Sent to Penitentiary.—Fred C. Heinl, recently convicted at Grand Rapids of manslaughter, was sentenced, June 30, to imprisonment in the state penitentiary for a term of from ten to fifteen years. Heinl, an abortionist from Chicago, performed an illegal operation resulting in the death of a young woman. THE JOURNAL, in May, 1926, called to the attention of the Illinois Department of Registration and Education Heinl's alleged abortion activities carried on from his Chicago address. Heinl, who was not a graduate in medicine, drummed up trade in Chicago by offering to split fees with druggists who would put him in touch with women who wanted work of this sort done.

Policy on Free Clinics.—The Kent County Medical Society adopted a resolution, recently, outlining its policy with regard to free clinics as follows:

1. The Kent County Medical Society through its members stands ready at all times to give free medical services to the needy. Their interpretation of the "needy" shall be not only the paupers but also those individuals who in the opinion of a trained social worker are worthy of that service.
2. The Kent County Medical Society shall have through its committee on clinics a representative on the staff of every organization giving free clinic service. So far as possible this representative shall be chosen from such of its members who are at the time serving on clinics.
3. The president shall appoint at the beginning of his administration a committee of three to be known as the standing committee on clinics. This committee shall designate its representative on the various clinics. These representatives together with the committee appointed by the president shall be known as the conference committee on clinics.
4. We recommend, first, that clinics giving free service shall have a trained social investigator, and second, that the records of their investigations shall be accessible to this committee at all times.
5. This committee shall report from time to time the result of its investigations and make its recommendations to the society.
6. The Kent County Medical Society is opposed to the plan that any patient of a free clinic shall pay more than a simple initial fee not to exceed 50 cents and not more than 20 per cent above cost of drugs and supplies.
7. The Kent County Medical Society is opposed to the acceptance by its members of any fee for attendance on free clinics conducted on the plan as outlined in this report.
8. Realizing the difficulty of establishing an economic standard for free service the committee shall stand ready to cooperate with the social workers in arriving at an equitable and proper solution of these problems.

The New University Hospital.—The new building of 700 beds, the old buildings converted into convalescent units with 300 beds, and the contagious unit with fifty beds, place the University Hospital at the University of Michigan, Ann Arbor, among the large hospitals of the country. The new building is nine stories, concrete, finished in gray brick and stone, and built on the Y and T plan, each room having out-

side exposure. There are 2 miles of corridors and 10 acres of floor space. It is a monument to the people of the state, designed and equipped to care for the sick and to teach scientific medicine. The first floor is devoted entirely to clinics and clinical service; the south wing of the third floor is for living quarters for about sixty interns. The east and west wings of the sixth floor are to be used as wards for children. The seventh floor provides a roof garden and occupational therapy storage rooms, and a beautiful view of the Huron River Valley. There are amphitheaters and auditoriums, lecture rooms, special laboratories, lounging rooms for visiting physicians and others for students, isolation units, dispensaries, shops and, it appears from the description, all the other accessories and equipment necessary to make the hospital a great center for the care of the sick and the teaching of medicine.

MINNESOTA

Society News.—The Minnesota Neurological Society met in Rochester, June 11; there was a surgical clinic, five papers were presented by local physicians and an address was given by Dr. Monrad-Krohn, professor of neurology, University of Oslo, Norway.

Personal.—Dr. Herbert E. Chamberlain, White Plains, N. Y., has been appointed director of the child guidance clinic of Minneapolis to succeed Dr. Smiley Blanton, who resigned to accept a position at Vassar College.——The governor has recently appointed Drs. Edward W. Fahey, St. Paul; Howard R. Weirck, Hibbing, and William H. Barr, Wells, new members of the state board of health.——Dr. Alvah W. Jones has been appointed health officer of Red Wing to succeed Dr. Myron W. Smith.——Dr. Grace G. Smith has been elected president of the board of education of Red Wing.——Dr. James J. Swendson has been elected president of the Lions Club of St. Paul.——Dr. Leo G. Rigler, Minneapolis, has been appointed roentgenologist at the state university hospital.——Dr. Rhodric W. Browne,

who has been charge of the Aberdeen Hospital, St. Paul, has been appointed head of the U. S. Veterans' Bureau Hospital, Fort Bayard, New Mexico

MONTANA

Personal.—Dr. Curtis W. Wilder, Lewiston, has been appointed health officer to succeed the late Dr. Thomas H. Pleasants.——Fred D. Stimpert has been appointed director of the state hygienic laboratory at Helena; Mr. Stimpert formerly was instructor of biology at the University of Montana, Missoula.

NEW HAMPSHIRE

Society News.—Dr. George S. Hazard, Hollis, was elected president of the Hillsboro County Medical Society, April 26; Dr. Alfonse W. Petit, Nashua, vice president, and Dr. Deering G. Smith, Nashua, secretary-treasurer.

State Medical Election.—At the one hundred and thirty-sixth annual meeting of the New Hampshire Medical Society, New Castle, June 22-23, Dr. Emery M. Fitch, Claremont, was elected president; Dr. Joseph J. Cobb, Berlin, vice president, and Dr. Dennis E. Sullivan, Concord, secretary-treasurer. Dr. Sullivan was chosen delegate to the American Medical Association. At the annual banquet, Dr. Ezra A. Jones was toastmaster. Among the scientific papers was one by Dr. Orrin S. Wightman, New York, and a symposium by Drs. Harlow Brooks and John F. Erdmann, New York, and by Drs. Adelbert S. Merrill, Manchester, Howard N. Kingsford, Hanover, and James W. Jameson, Concord. Mrs. Henry H. Amsden, Concord, was elected president of the woman's auxiliary. Mrs. John O. McReynolds, Dallas, Texas, president of the National Woman's Auxiliary, attended the meeting.

NEW MEXICO

Personal.—Dr. Howard W. Heymann, Raton, has been appointed part-time health officer of Colfax County, to succeed Dr. Augustus B. Stewart.——Dr. Albert J. Hoskins, formerly commanding officer, U. S. Veterans' Hospital, Fort Bayard, has been transferred to Phoenix, Ariz.; Dr. Rhodric W. Browne, St. Paul, will take charge at Fort Bayard.

Public Health Association.—The third annual meeting of the New Mexico Public Health Association was at Taos, June 2-3; among others, Dr. Meldrum K. Wylder, Albuquerque, spoke on "Breast Feeding of Infants." Dr. Charles W. Gerber, Las Cruces, led a round table discussion on the control of German measles and chickenpox, and Dr. Cranford H. Douthirt, Clayton, one on cooperation with the medical profession, and Dr. Owen E. Puckett, Carlsbad, one on the medical examination of food and drug handlers. Dr. Dudley B. Williams, Santa Fe, discussed "Standardization of Record Forms for Full-Time County Health Units," and Dr. I. O. Church, "County Health Work in Kansas."

NEW YORK

Personal.—Dr. George H. Whipple, dean and professor of pathology, University of Rochester School of Medicine and Dentistry, was awarded the honorary degree of doctor of science, recently, by Colgate University.——Dr. Helen L. Palliser, Poughkeepsie, has been elected secretary of the Medical Women's National Association.

Society News.—Dr. Harry R. Trick, president-elect, Medical Society of the State of New York, was guest of honor at the annual meeting of the Genesee County Medical Society, Dansville, June 24.——Members of the Medical Society of the County of Erie offered their fifth program of instruction on heart disease, June 9, at Alumni Hall, University of Buffalo, when among the papers read were those by Dr. John H. Wyckoff, Jr., New York, and Dr. William D. Stroud, Philadelphia.

New York City

Dr. Mosher Honored.—Dr. Eliza M. Mosher, one of the earliest women graduates in medicine, turned the first spadeful of earth, June 18, for the new women's building, University of Michigan, Ann Arbor, for which the alumni have collected $1,000,000 in the last five years. Dr. Mosher was for years dean of the women students and the first full-time women professor on the faculty. The hostess room in the women's building will be named in her honor.

Personal.—Dr. William F. Wild has resigned as field representative of the American Society for the Control of Cancer, and Dr. Raymond V. Brokaw, superintendent of health of Springfield, Ill., has been appointed to fill the vacancy.——Dr. Frankwood E. Williams received the honorary degree of doctor of science from Colgate University at the recent commencement.——Dr. Harlow Brooks has been appointed professor of internal medicine at the Polyclinic Medical School and Hospital.

Meeting of Orthodontists.—The Alumni Society of the Dewey School of Orthodontia will meet, August 29-31, at the Hotel Vanderbilt, for a series of clinics and lectures. Clinics will be given by several men from New York and from Nashville, Tenn. Homer B. Robison, D.D.S., Great Bend, Kan., will lecture on "Some Erroneous Diagnoses of Acromegaly" and "Endocrines—Their Effect on the Osseous, Genital and Mental Development in Relation to Orthodontics"; other speakers will be Samuel E. Pond, Ph.D., University of Pennsylvania School of Medicine, Philadelphia, "Physical Consideration Concerning the Alleged Stability of Bone and Similar Structures"; Moe B. Markus, D.D.S., Philadelphia, "Review of the Literature on the Influence of Habits in Orthodontia"; Albert C. Holzman, D.D.S., Boston, "Orthodontia of Deciduous Teeth," and Russell E. Irish, D.D.S., Pittsburgh, "Mental Orthodontia—Its Stimulants and Depressants."

Changes in Personnel at Rockefeller Institute.—Among the changes in personnel of the scientific staff of the Rockefeller Institute for Medical Research are the following:

APPOINTMENTS

Dr. Carl Ten Broeck, professor of bacteriology, Peking Union Medical College, Peking, China, member.
Arthemy A. Horvath, associate in chemistry in the department of medicine, Peking Union Medical College, Peking, China, associate.
Dr. Mortimer L. Anson, assistant.
Dr. Allan M. Butler, assistant.
Dr. Claude E. Forkner, assistant.
Dr. Alvin R. Harnes, assistant.
Dr. Perrin H. Long, assistant.
Dr. Alfred E. Mirsky, assistant.
Dr. Gordon H. Scott, assistant.

PROMOTIONS

Dr. Thomas M. Rivers, associate member to member.
Dr. Carl A. L. Binger, associate to associate member.
Dr. Leslie T. Webster, associate to associate member.
Dr. Lillian Baker, assistant to associate.
Dr. Lawrence S. Kubie, assistant to associate.
Dr. Fred W. Stewart, assistant to associate.

Robert T. Hance, Ph.D., has resigned to become professor of zoology, University of Pittsburgh, Pittsburgh.

Two Brooklyn Hospitals Consolidate.—The Brooklyn Eye and Ear Hospital and the Williamsburg Hospital have consolidated after two years of consideration and will continue under the name of the Brooklyn Eye and Ear Hospital. There probably will be erected a seven story, fire-proof, $1,500,000 structure on Green Avenue extending the whole width of the block from Cumberland Street to Carlton. Both hospitals were founded about fifty years ago; the Williamsburg Hospital was consolidated with the Eastern District Hospital and Dispensary in 1916 and it closed its doors in 1920. The Brooklyn Eye and Ear Hospital was organized in 1864 on the present site of the Brooklyn Post Office, but soon moved to larger quarters on Washington Street, now the site of the approach to the Brooklyn Bridge. Since 1882, it has been at 94 Livingston Street and has averaged about 120,000 dispensary cases a year. Several years ago it sold the building and purchased a site for a new home at Green, Cumberland and Carlton streets, where it is expected the consolidation of the two hospitals will make it possible to proceed with the building program of the Brooklyn Eye and Ear Hospital, which has been postponed on account of the rising cost of construction.

NORTH CAROLINA

Society News.—Dr. James M. Parrott, Kinston, addressed the Wake County Medical Society, Raleigh, June 9, on "Business Relations of the Medical Profession."——The seven sanitary experts and inspectors of the state board of health loaned to the flood refugee camps were recalled to their duties in North Carolina, June 15.

Annual University Extension Courses.—The seventh annual summer courses of the extension division of the University of North Carolina School of Medicine is being given in the following centers: Wilmington, Fayetteville, Rocky Mount, Kinston, Greenville and Hamlet. The lectures and clinics are in pediatrics and general medicine, each class meeting once a week for twelve weeks. The instructor in pediatrics is Dr. Alexis F. Hartmann, St. Louis, associate professor of pediatrics, Washington University Medical School, and the instructor in general medicine is Dr. Charles L. Brown, instructor in medicine, Harvard University Medical School. The program is arranged so as to permit physicians to attend the courses with the least amount of disturbance to their

practice. The arrangement has proved unusually successful, and has come to be known and referred to in other states as the North Carolina Plan.

Hospital News.—The improvement to be made at the state hospital for colored insane, Goldsboro, included the replacement of the wooden building for tuberculosis cases with a fire-proof structure costing about $110,000.——Judge Sinclair, presiding at Kinston, in interpreting the report of the grand jury in regard to the insanitary conditions of county institutions, ordered the indictment of the responsible county officials unless the institutions were placed in sanitary condition at once.——The new Candler-Tidmarsh Hospital, Sylva, was opened for patients, May 20.——The new $100,000 Greensboro Hospital for Negroes was formally opened, May 24; half of the cost of the institution was donated by the family of the late Lunsford Richardson, the remainder being given by many citizens of the community. The roentgen-ray equipment, representing an investment of $7,800, was presented by Mrs. E. Sternberger. The hospital is complete and modern in every respect.——The Charlotte Hospital Association, organized, June 11, with Dr. Robert T. Ferguson, president, is composed of all the larger hospitals in Mecklenburg County. Quarterly meetings will be held.

NORTH DAKOTA

Society News.—At the annual meeting of the North Dakota Academy of Ophthalmology and Oto-Laryngology, Grand Forks, May 31, Dr. Rolfe Tainter, Fargo, was elected president to succeed Dr. Andrew M. Carr, Jr., Minot. The meeting included a banquet, and scientific and business sessions. The visiting clinician was Dr. Frank E. Burch, St. Paul.

PHILADELPHIA

University News.—The Woman's Medical College of Pennsylvania held its seventy-fifth annual commencement, June 9; degrees were given to fourteen graduates, six of whom will go to foreign medical missionary service after completing their internships.

Hospital News.—The assets of the old Roosevelt Hospital, which was sold in 1924, have been donated to Temple University, and will be devoted to the completion of the fourth floor of the Samaritan Hospital, the construction of rooms and the conversion of private rooms in the old building into public wards. The additional floor will be known as the Roosevelt Memorial floor of the Samaritan Hospital.

Annual Heart Demonstration.—A demonstration in cardiac diagnosis and treatment was given, May 23-26, by the Philadelphia Heart Association cooperating with the Pennsylvania Heart Association, which was practically identical with the two previous annual demonstrations. Thirty-three physicians from over the state attended, whereas the first one in 1925 had an attendance of fourteen and the second in 1926 of twenty-seven. The increased interest makes it desirable to continue the demonstrations each year, with the object of establishing heart clinics throughout the state where persons unable to afford competent care will be thoroughly studied. Demonstrations were made at the University of Pennsylvania and Temple University, at Jefferson Medical College, the Children's Heart Hospital and the Presbyterian Hospital by teachers well known in this line of work and were so arranged as to allow each person present to see at least one heart clinic in operation.

Personal.—Dr. Chevalier Jackson gave the address at the fifty-seventh commencement at Ursinus College, Collegeville, June 6. Dr. Jackson has presented the casket, gold medal and scroll, constituting part of the Bok Award recently received by him, to the College of Physicians of Philadelphia. ——Dr. Orlando H. Petty was nominated without opposition for president of the Philadelphia County Medical Society, June 15, and his election will automatically follow in November.——Dr. Valentine R. Manning was guest of honor at a testimonial dinner at the Elks Club, June 15, attended by about 400 friends.——Dr. George E. de Schweinitz, Past President of the American Medical Association, received the honorary degree of doctor of science from Harvard University at the commencement, June 23.——Dr. Hobart A. Hare, professor of therapeutics, materia medica and diagnosis, Jefferson Medical College, was guest of honor at a dinner at the Schuylkill Country Club, Pottsville, June 14.

Firemen Honor Dr. Da Costa.—The firemen of Philadelphia have donated $2,000 to the building fund of Jefferson Medical College in honor of Dr. John Chalmers Da Costa, professor of surgery, Jefferson Medical College, who, for about thirty-five years, gratuitously served as surgeon of the fire bureau, surgeon of the Firemen's Pension Fund and in other capacities. A similar amount was contributed from the sheriff's office in honor of Dr. Da Costa and both funds will be used jointly to establish a memorial to him. It appears that Dr. Da Costa's devotion to the fire bureau is a family trait, as his grandfather was a member of the Northern Liberties Volunteer Fire Engine Company, his father a member of the Philadelphia Hose Company, and his uncle, a member of the Phoenix Hose Company. For about thirty-five years, Dr. Da Costa never failed to attend a fire of any importance in the city. The fund was given by the members of the department, many of whom he had attended at the scene of a fire. Physical disability compelled Dr. Da Costa to resign as surgeon of the Firemen's Pension Fund about seven years ago, although he still holds the position in an honorary capacity.

TENNESSEE

Health at Memphis.—Telegraphic reports to the U. S. Department of Commerce from sixty-seven cities with a total population of about 30 million, for the week ending June 25, indicate that the highest mortality rate (19.2) was for Memphis, and that the mortality rate for the group of cities as a whole was 11.2. The mortality rate for Memphis for the corresponding week last year was 25, as estimated by the arithmetical method, and for the group of cities, 11.2.

Malaria in Tennessee.—During 1926, there were 1,686 cases of malaria in the state, an increase, according to the Tennessee Department of Public Health, of 306 cases reported; in 1925 there were 159 deaths from malaria. Of the cases reported last year, 68.3 per cent were in West Tennessee. Six of the twenty counties in that portion of the state have whole-time health service. As the waters of the flood recede and the homes are rehabilitated in that section, the malaria problem will become more serious. The chief weapons of defense against malaria are quinine prophylaxis and the screening of carriers. One county in West Tennessee requested 21,000 capsules of quinine in a single order, and three counties have a standing order of a shipment of 32,100 capsules a week. The screening of carriers and general screening operations will be carried out with the cooperation of the U. S. Public Health Service officials.

WEST VIRGINIA

Hospital News.—Dr. Mortimer D. Cure has retired from the staff of the Weston State Hospital for the Insane at Weston and has been succeeded, temporarily, by Dr. John G. Pettit from the Hopemont Tuberculosis Sanatorium.

State Medical Election.—At the sixtieth annual meeting of the West Virginia State Medical Association, White Sulphur Springs, June 21-23, Dr. Charles A. Ray, Charleston, was elected president; Drs. Desausseur G. Preston, Lewisburg, Edward L. Armbrecht, Wheeling, and Walter C. Swann, Huntington, vice presidents, and Dr. Thomas M. Barber, Charleston, treasurer. The new executives take up their duties, Jan. 1, 1928. Mr. Joe W. Savage was reelected executive secretary of the association; Dr. James R. Bloss, Huntington, editor of the journal; Dr. Raymond H. Dunn, South Charleston, a chairman of the council; Dr. Henri P. Linsz, Wheeling, delegate to the American Medical Association. The members considered at this meeting a plan of erecting a permanent home for the society at Charleston and were of the opinion that in a few years the permanent headquarters would be established.

WISCONSIN

Personal.—Dr. John L. Yates, Milwaukee, was elected vice president of the American Association for Thoracic Surgery, New York, May 11.——Dr. Fred E. Tryon has been appointed health officer of Baraboo.

Society News.—Dr. George F. Dick, Chicago, addressed the Milwaukee Pediatric Society at the Milwaukee Children's Hospital, June 8, on "Scarlet Fever," and Dr. Karl E. Kassowitz, Milwaukee, on "Bactericidal Effect of Quartz Light." ——Dr. Ralph W. Webster, clinical professor of medicine and medical jurisprudence, Rush Medical College, Chicago, addressed the Brown-Kewaunee County Medical Society, Green Bay, May 3, on "Malpractice."——Among other speakers before the Grant County Medical Society at Boscobel, May 10, were Drs. Edward W. Alton Ochsner, professor of surgery, University of Wisconsin Medical School, Madison, on "New and Simple Methods of Chest Diagnosis," and James H. Fowler, on "Relation of the Specialist to the General Practitioner." The society had dinner with the Boscobel

Kiwanis Club; at the election of officers, Dr. Charles S. Hayman was made president for the ensuing year.

Fifth District Meeting.—The Fifth Councilor District Medical Society held its annual meeting, June 30-July 1, at Elkhart Lake, where there are facilities for golfing, boating, tennis, fishing and swimming. Drs. Wilber E. Post and Paul B. Magnuson, both of Chicago, read papers on "Diseases of the Kidney" and "Treatment of Fractures," respectively; Drs. George V. I. Brown, Madison, spoke on "Plastic Surgery as Related to Practitioners of General Surgery"; Joseph P. McMahon, Milwaukee, "Experiences and Responsibilities of the Medical Profession with the Cancer Problem"; Otto H. Foerster, Madison, "Ringworm Infection of the Hands and Feet; a Common and Usually Unrecognized Dermatosis"; Friedrich Eigenberger, Sheboygan, "Experiments with Rattlesnake Venom," and Cornelius A. Harper, Madison, "Periodic Examinations of the Apparently Healthy." Following the banquet, Thursday, Glenn Frank, president, University of Wisconsin, and Dr. Arthur W. Rogers, president of the state medical society, gave addresses.

GENERAL

Society News.—At the annual meeting of the American Psychopathological Association, June 3, Cincinnati, Dr. Ross M. Chapman, Towson, Md., was elected president and Dr. Martin W. Peck, Boston, secretary. The next annual meeting will be held at Minneapolis.

Birth Rates Lower—Death Rates Higher.—In twenty-six of the twenty-eight states for which figures for the two years are available, the birth rates were lower for 1926 than for 1925, the department of commerce announces. Florida had the highest birth rate (26.4 per thousand of population) for 1926, and Montana the lowest (14.2). In twenty-three of the twenty-eight states for which figures are available for both years, the death rates for 1926 were higher than for 1925. Florida had the highest death rate (15.3 per thousand of population) and Montana the lowest (7.8). Twenty-one of the twenty-eight states showed higher infant mortality rates also for 1926, with Delaware the highest, 92.9, and Oregon the lowest, 51.6.

Ten Years of Bovine Tuberculosis Work.—In the ten years of the campaign to eradicate bovine tuberculosis from dairy herds of the United States, about 30 million cattle have been tested for tuberculosis and about 1 million of them have been destroyed. During this period, the annual consumption of milk in this country has increased more than 49 quarts per capita. During 1926, the U. S. Department of Agriculture notes that the public consumed 56 billion pounds of milk and cream. Cities and towns have become aware of the importance of better milk and 874 of them have adopted ordinances requiring tuberculin testing of cattle; in addition, 375 cities and towns provide an option between tuberculin testing and pasteurization. Thus 1,249 municipalities have taken positive steps to safeguard their milk supply.

Reorganization of Food and Drug Administration.—The U. S. Department of Agriculture announces that the new unit known as the Food, Drug and Insecticide Administration will become effective, July 1; W. G. Campbell will be in charge. Congress created the Food, Drug and Insecticide Administration recently for the purpose of separating work involving scientific research from the work of law enforcement. The new arrangements involve no change in the policy of enforcement and other acts concerned. The laboratories of the Bureau of Chemistry that are now engaged on food and drug control work will operate under the new unit. Mr. Campbell was a lawyer before joining the department of agriculture about twenty years ago. P. B. Dunbar, Ph.D., the assistant chief of the new unit, entered the service of the Bureau of Chemisty in 1907, and since 1925 has been assistant chief of the bureau.

Mosquito Eradication in Southern Salt Marshes.—The U. S. Public Health Service, under a special appropriation made by Congress, has been conducting surveys of the salt marshes of the South Atlantic and Gulf States in order to devise economical means of eradicating mosquitoes. These studies made in various states show the magnitude of any plan necessary to eliminate the breeding of salt marsh mosquitoes. These marsh areas range from 33,361 acres in one Southern state to 3,381,514 acres in another state. In studying methods to destroy mosquitoes in salt marshes, the factors to be investigated include the breeding and flight of the species of mosquitoes encountered, the type of vegetation found in the marsh area, the character of the soil, acreage of marshes, information on drainage, filling and the construction of seawalls, the making of maps and collection of climatological data. Detailed studies of these factors are necessary to determine economical means of preventing the breeding of mosquitoes in these marsh areas. One fact brought out in a survey was in regard to the general distribution of *Anopheles atropos*. An observer had classed this species of mosquito as a mud breeder. The Public Health Service demonstrated that this mosquito breeds not only in muck pools in salt marshes, but in salt marshes in clear water. In several locations, the adults of this species were found to be more numerous than other types of salt water breeders and they were found to enter houses and bite freely by night and by day.

National Committee for Prevention of Blindness.—The twelfth annual report of this committee contains a tabulation which indicates that the amount of blindness due to ophthalmia neonatorum in schools for the blind decreased from 23 per cent during the period 1908-1912 to 12.5 per cent during the period 1923-1926. During the last year the national committee conducted two joint sessions with the American Social Hygiene Association on the subject of "Relation of Venereal Diseases to Vision Impairment." Some of the most prominent ophthalmologists, syphilologists and public health officials participated in these conferences. The committee sponsored the establishment of preschool eye clinics, and at the end of 1926 this work was being carried on in three demonstration centers, where children between 3 and 6 years of age had their eyes inspected and examined when necessary. The report notes that the sight-saving classes in the United States have increased from two in 1913 to 265 in 1926. This work, aside from promoting public interest in sight-saving, concentrates on two special projects: the conducting of courses during the summer sessions on eye hygiene and methods of sight-saving class work at the University of Cincinnati, and a brief survey of schools for myopic persons in Great Britain. The committee continued to promote the use of mechanical devices in industries to save sight; to educate employers and other officials in the necessity for these devices, and to provide adequate light and sanitary facilities in industry. The honorary president of the committee is William Howard Taft, and the managing director, Lewis H. Carris. The headquarters office is at 370 Seventh Avenue, New York.

CANADA

Personal.—Drs. Judson V. Graham and Victor O. Mader have been appointed on the staff of the Dalhousie Clinic to fill vacancies caused by the death of Dr. Vernon L. Miller and the resignation of Dr. Philip Weatherbe.——Dr. Edward W. Archibald, director and professor of the surgical department of McGill University Faculty of Medicine, was recently made an honorary fellow of the Royal College of Physicians of London; Dr. Archibald is the fourth Canadian to be thus honored.——N. B. Dreyer, assistant professor of physiology, Dalhousie University Faculty of Medicine, has resigned to accept an appointment in the department of pharmacology at McGill University Faculty of Medicine, Montreal.

Traveling Health Clinic.—The clinic organized by the minister of health, the Hon. Mr. Hoadley, started, May 15, to visit 120 rural communities which have voluntarily requested a visit. The clinical personnel will examine school children and any other person free of charge, and when necessary will perform minor operations, making a nominal charge for those able to pay. The *Journal of the Canadian Medical Association* says there is a physician, an anesthetist, a dentist and two nurses in the party, and a second physician follows up, remaining on call in a community for twenty-four hours, to be present in case of any complications following a minor operation. The clinic will be out for about four months. The equipment and personnel are carried in two automobiles.

Society News.—Dr. Austin B. Schinbein was elected president of the Vancouver Medical Association at its twenty-ninth annual meeting, April 19, Vancouver; Dr. George F. Strong, secretary, and Dr. Anson C. Frost, treasurer.—— At a joint meeting of the British Columbia Medical Association and the Vancouver Medical Association, Vancouver, June 22, Dr. Benjamin P. Watson, New York, was the principal speaker.——Dr. James G. McKay, Vancouver, addressed the May meeting of the Victoria Medical Society on "Paranoidal States of Interest to General Practitioners." ——At the twentieth annual meeting of the Academy of Medicine of Toronto, May 3, Dr. John H. McConnell was elected president. The library of the academy is the second largest in Canada, having 8,500 volumes and about 250 current medical journals. The present membership of the academy is about 862.

LATIN AMERICA

Costa Rica Creates Health Department.—A cablegram received from Dr. Solon Nunez, secretary of State of Costa Rica, states that a national department of public health and public welfare has just been organized in Costa Rica. Costa Rica thus becomes the sixth Latin American country to recognize the importance of public health matters by placing them in exclusive charge of a member of the cabinet. Bolivia, Chile, Cuba, Honduras and Santo Domingo had already acted to the same effect. Dr. Solon Nunez, the head of the former health bureau, becomes the first incumbent of the newly created position.

Hospital Laboratory Dedicated.—The Presbyterian Hospital, San Juan, Porto Rico, has converted one floor of the hospital into clinical and research laboratories, which were formally dedicated recently. Dr. James W. Jobling, professor of pathology, Columbia University School of Medicine, New York, and Dr. Robert A. Lambert, director, School of Tropical Medicine, were guests of honor at the ceremonies. The laboratories are equipped for all modern diagnostic procedures. The director, Dr. Charles Weiss, of the department of bacteriology of the School of Tropical Medicine, was formerly a fellow in medicine of the National Research Council studying at Columbia University.

FOREIGN

Unusual Study of Children.—The Malting House, Cambridge, England, desires to obtain the services of a scientist of the first order, as young as possible, with a knowledge of the theory of science to investigate and conduct the introduction of children to science and scientific methods. To obtain the services of a suitable scientist, a salary will be paid such as will enable him to leave his present occupation whatever that may be. Preliminary work with young children (from 4½ to 7 years of age) has already been done at the Malting House School. It has encouraged the directors to make a full-time, long period appointment to develop this work, and they hope it will be the beginning of a research institute into problems connected with education. They desire a man of outstanding suitability, not necessarily a specialist in his own branch, acquainted with other sciences, the history of science and the history of religious beliefs. The problem involves in part an investigation by delicate observation of what sort of activities are best introduced into the child's environment and what should be the order of opportunity for these activities; further, the question of whether there exists any special factors limiting or making undesirable the introduction of children of such tender age to scientific knowledge and scientific thought. The work involves also developing a technic to utilize the child's native curiosity in such a way as in the long run to obtain the maximum conversion of his native curiosity into a controllable instrument of organized thought. The directors will be assisted in selecting the scientist by Prof. Sir Ernest Rutherford, Prof. Percy Nunn and Mr. J. B. S. Haldane. Communications should be addressed to The Directors, The Malting House, Cambridge, England.

Government Services

Graduation at Army Field Service School

The class in the eighth basic field course at the Army Medical Field Service School, Carlisle Barracks, Pa., graduated, May 28. Brig. Gen. Frank R. Keefer, assistant surgeon general, gave the principal address and presented the Skinner Medal for the highest standing in the class to Lieut. George E. Armstrong, medical corps. There were six other honor graduates, one of whom was from the veterinary corps. The total enrolment in the class was fifty-eight, including medical, dental and veterinary officers; one officer of the navy, two of the Cuban army and one each of the dental corps and the Philippine Constabulary. Lieut. Col. Charles R. Reynolds, commandant of the school, presented the diplomas.

Reserve Officers Assigned to Flood Duty

The following reserve assistant surgeons of the U. S. Public Health Service were assigned to duty at New Orleans in connection with flood work, June 11:

Edmund T. Lentz	William W. Nesbit	Charles B. Stacy
W. J. Bryan McAuliffe	Leon O. Parker	Joseph F. Van Ackeran

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 18, 1927.

Opticians Fail to Obtain Recognition by the Government

The attempt of the osteopaths to obtain state recognition ended in failure. A similar attempt by another body of irregular practitioners has met the same result. In the house of commons was moved the second reading of a bill to secure the registration of optical practitioners and to regulate the practice of sight-testing. It was proposed to set up a central optical board of Great Britain with power to register persons, after evidence of qualification, as optical practitioners. The mover of the bill said that every state of the United States had laws controlling and directing opticians. The Americans were probably the most bespectacled people in the world. That was not because their eyesight was worse than that of other peoples but because they recognized the fact that eyesight was important and took precautions to preserve it. That fact was also coming to be more and more recognized in this country. More spectacles were being worn by adults and children in this country than were worn eight or ten years ago, not for the reason that the eyesight of the country was worse but because of the efforts of opticians to cope with the problem. In the Council of the British Opticians and the Council of the Worshipful Company of Spectacle-Makers there was a registration of 3,500 opticians, of whose qualifications some guarantee was given. Opposition to the bill came from the unqualified opticians and the medical profession. There were at present a large number of quacks and venders of spectacles who had neither the apparatus nor the ability to test eyesight, and there had grown up something of a vested interest which would be affected if this bill became law. There were, however, many opticians who, though unqualified, had had long experience in this particular kind of work but who might have difficulty in satisfying the tests that were suggested in the bill. There was nothing in the bill to hinder any one who was now carrying on work as an optician continuing to do so. All the bill would do would enable the public to distinguish between men with regard to whose qualifications some guarantee was given by the board set up under its provisions and those whose qualifications could not be vouched for by a responsible organization. It was said that only 5 per cent of the cases of defective eyesight were due to some disease of the eye or disease arising from some other cause, and the opposition of the medical profession was based on what it feared would be the danger to this percentage from the registration of opticians who, though they might be perfectly qualified to test the sight and to prescribe the appropriate glasses, had not the training necessary to enable them to diagnose the cause of the trouble in the eye.

A physician, Dr. A. V. Davies, moved an amendment, "That the House declines to give a second reading to a bill the subject matter of which is at the present time being investigated by a departmental committee." He said that the promoters of the bill asked that a body of unqualified men, with a certain amount of training, which might be limited or otherwise, should have state approval of their profession. If they were successful in their demand, it would mean that the public would regard them as competent to examine and treat eyes, and that was a position which could not be maintained. Sir George Berry, the ophthalmic surgeon of Edinburgh, in seconding the amendment said that legislation on the lines proposed would not be in the real interests of the public. In his experience, which was fairly considerable, he had never

known a case in which spectacles, however unsuitable, did any harm to the eyesight. There was such a thing as considerable discomfort being caused by unsuitable spectacles, as there was in the wearing of ill fitting boots or a nonfitting dental plate, but it was an exaggeration to say that there was any actual danger to the eye from that source. Although spectacles, even if unsuitable, did not do harm, they were, if they were suitable, capable of doing a great deal of good. That, to his mind, was a justification for the public having the services of skilled opticians, but it did not, in his view, justify the kind of legislation proposed by this bill, which was calculated to mislead the public and to arouse a mistaken and, therefore, an undesirable degree of security. The optician might be able to detect the existence of disease, and, perhaps, to discriminate, in some cases, between diseases of the eye; but he could not do so without being liable to make a great many mistakes unless he had had the full training of a physician. Sir Kingsley Wood, parliamentary secretary of the ministry of health, said that the prevalence of defective sight among school children was about 10 per cent. In the population generally it could be roughly estimated that the number of persons with defective sight in England and Wales was about one in five. There was undoubtedly a case for something to be done, but there was considerable divergence of opinion as to how it should be done. Physicians had urged with a considerable amount of weight that there was an appreciable percentage of cases in which great harm might be done by an ophthalmist through lack of medical knowledge, but how far that argument was valid could be ascertained only by full investigation of the facts. It was all the more important that there should be an impartial inquiry because of the large amount of money now being spent by approved societies on optical benefits. He suggested, therefore, that the matter should be referred to a departmental committee. The motion for second reading was negatived without a division.

Clean Milk

An important discussion on clean milk took place at the Surrey County Hospital, Guildford, where a joint meeting of the medical and veterinary professions was held. Professor Hobday, honorary veterinary surgeon to the king, urged that the eradication of tuberculosis from nearly a million milch cows in this country was a question not only of cost but also of expediency. At present there were many hundreds of milking sheds in which the inspector appointed by the ministry of health, usually a physician, had never set foot, and often the official inspector, even if he tried to perform his duties properly, had no practical knowledge of what he was supposed to inspect. Such inspection was obviously the job of the veterinarian, and it seemed anomalous in 1927 to find the work being attempted by the health officer or the sanitary inspector. For satisfactory inspection the inspection board should have a health officer, a veterinary officer of health and a sanitary inspector. Each would find plenty to do in his own legitimate sphere, and neither would overlap the work of the other. Professor Hobday also drew attention to the astonishing apathy and ignorance of the public in regard to clean milk and the consequent need for education, which could be given only by the medical and veterinary professions.

Dr. Nathan Raw, president of the Tuberculosis Society of Great Britain, thought it to the discredit of this country that, after twenty-five years' work, from 10 to 12 per cent of the samples taken of our milk supply still contained tubercle bacilli. He was a stanch advocate of the production of clean milk in the first place, but this was for the most part an unattainable ideal at the present time. He therefore had been reluctantly converted to pasteurization as the only possible way of guaranteeing safe milk for our great urban population. Mr. Male, a veterinary inspector, said that farmers could produce clean milk if the public would pay for it. If only the milk and dairies act were properly administered throughout the country we should hear little about dirty milk. The need for pasteurization would not exist, since in a short time only clean milk from tuberculous free herds would be produced. Dr. Howell, health officer for Hammersmith, said that the superior safety of London's milk at the present time was reflected in a big reduction in infantile troubles. Owing to the uncertain conditions of milk production, pasteurized milk was the only safe form. A representative from Reading University urged the meeting to rebut the statement so often heard that clean milk—that is, the higher grades of milk—was an expensive luxury. The production of clean milk was not a question of expensive and elaborate sheds and equipment but of method. Pasteurization might destroy the noxious germs in milk, but it could not make dirty milk clean. It was just as easy to produce a clean product as a dirty one. All that was required was education first of the farmer and secondly of the public, who must be taught to buy clean milk at a fair price.

The World's Hospitals

The results of an extensive tour of hospitals in Europe and America were submitted to the Royal Institute of British Architects by Mr. Lionel G. Pearson, F.R.I.B.A. He was confident that no country had finer hospitals than England, but there was much to be learned from other countries. There are some critics who would say that in Europe the comfort of the patient is the first consideration, while in America the efficiency of the staff is; but the two points of view seem to be of almost equal importance to the hospital planner. The science of hospital planning was pursued very successfully in all the countries visited, and there was a friendly rivalry to produce buildings which are down to date from the point of view of medical science, and, at the same time, attractive to the patient. Mr. Pearson was cheered to find in his journeys that some of the difficulties that beset hospital architects in this country are apparently universal; for instance, he never met a sister who was really satisfied with the accommodation provided for linen, or found a type of window that admitted fresh air without causing a complaint from some patient in the ward. Dealing with the American part of his tour, Mr. Pearson said that the number of hospitals which had been built during the last ten years was amazing. The multistoried hospital was the most popular just now. This has led to the vertical type of planning, with the elevator, the laundry chute, and various other labor-saving devices. The long corridors of the European hospital are considered quite out of date, and one American visitor remarked, after seeing one of our hospitals, that he hoped the staff were fitted with roller-skates. The entrance was made as attractive as possible and the waiting room furnished like a hotel lounge; the anesthetic room was frequently furnished like an ordinary room to avoid "the operation atmosphere." The increasing importance of roentgen-ray work was nowhere more fully recognized than in America, where its use for diagnosis had reached such a point in one important hospital more than 85 per cent of the patients were now roentgenographed. The large ward seemed to be a thing of the past, and smaller units are now the rule everywhere.

The World's Finest Dental Clinic for London

London will soon possess the world's finest dental clinic. This will be due to the generosity of Mr. George Eastman of Rochester, N. Y., and head of the Kodak Company, who is giving $1,500,000 in order to establish the clinic in London. Mr. Eastman has for many years taken a great interest in dentistry, and particularly in the care and improvement of

children's teeth. Ten years ago he established a clinic in Rochester, N. Y., under the direction of Dr. Harvey J. Burkhart. Dr. Burkhart is in London making the arrangements for the establishment of the new clinic. It will contain fifty chairs in the main infirmary and seven in the orthodontia department. There will also be twenty-five beds for tonsils, adenoids and cleft palate cases, for which at present there is a great scarcity of beds in London.

Visit to London of the Inter-State Post-Graduate Assembly of North America

The Inter-State Post-Graduate Congress has held a three-day session, including lectures and visits to various London hospitals. A lecture on gallstones was given by Sir Crisp English. Dr. L. S. T. Burrell gave a lecture on shock tactics in pulmonary tuberculosis. Visits were paid to the Middlesex Hospital, Charing Cross Hospital, the London Temperance Hospital, and St. Paul's Hospital for Skin and Genito-Urinary Diseases. At each of these institutions, demonstrations and lectures were given.

PARIS

(From Our Regular Correspondent)

June 1, 1927.

Meeting of the General Association of French Physicians

The Association générale des médecins de France held last week in Paris, in the large amphitheater at the Faculté de médecine, its seventy-fifth general assembly since its foundation. Ninety-four constituent local associations sent delegates. The association comprises 10,060 members, 566 having been added this year, but from this number 263 must be deducted by reason of deaths. It has, since the last report, distributed 214,404 francs in the form of benefits in aid of 342 physicians or their families, and has, in addition, accorded pensions to 174 of its aged or disabled members. The local societies all have their own independent treasury for social welfare work, but they send each year to the general treasury one tenth of the dues that they collect (the dues range from 16 to 60 francs, according to the region), and, in addition, a fixed sum of 5 francs per member. The association received considerable endowment from the estate of D. Benoît of Montauban, who was, however, not a member. Among the subjects discussed by the general assembly were the proposal to create a council on medical ethics, the publication of a code of medical ethics, and the publication of a memorial volume dedicated to the physicians killed during the war. The closing banquet took place in the halls of the medical arts building (*foyer médical*), which was dedicated on that occasion, although not fully completed as yet nor opened to its members. At the banquet M. André Fallières, minister of public health, presided.

The Inquiry on Cancer

An extensive inquiry has been opened on cancer and all the physicians of France have been requested to address to Professor Hartmann, president of the league against cancer, their personal opinions, on the basis of their observations of their patients, on the following three questions: (1) the hereditary transmission of cancer; (2) the contagiousness of cancer, and (3) its relations to other diseases. The medical journals have already begun the publication of some of the more interesting replies in order to stimulate the zeal of others. It is apparent from the fraction of replies already received that many physicians believe in the hereditary transmission of cancer but that they hesitate to admit its contagiousness, not having observed any convincing examples. It is evident also that many assign to syphilis, and even to tuberculosis occasionally, a predisposing rôle. Dr. Dorvaux of St. Denis urges that the posters put up everywhere by the league warning against the dangers of cancer should contain also a warning against the claims of quacks concerning pharmaceutical products with which patients vainly treat themselves and thus allow the (often brief) period to slip by within which they might, with good hope, have recourse to the surgeon or to the radiologist for an early diagnosis that would serve as the basis for efficacious treatment. Unfortunately, there is in France no official control of advertisements of remedial agents; consequently, the quacks who exploit such remedies or who create so-called cancer institutes do a prosperous business.

The Centenaries of Vulpian and Pinel

The ceremonies in honor of the centenaries of Vulpian and Pinel, which were held simultaneously in spite of the fact that these scientists, a physiologist and an alienist, were devoted to quite different fields of research and that a gap of a century intervened between the two men, extended over a whole week but were not attended by many besides the official personages, owing to the distraction occasioned by the flight of Lindbergh. Friday, May 27, and Saturday, May 28, there was a plenary assembly of the Société de biologie and its affiliated societies. Saturday evening, in the large amphitheater of the Faculté de médecine, there was a formal meeting presided over by M. André Fallières, minister of public health, and supported by presidents of the large learned societies and numerous official foreign delegates. Dr. Fano, *"senatore del regno,"* spoke in the name of the latter. M. Roger, dean of the Faculté de médecine, recounted the scientific career of Vulpian, who was likewise dean of the medical faculty. M. Lacroix, as the representative of the Academy of Sciences, and M. Rathery, who occupies, at present, in the medical faculty, the chair formerly held by Vulpian, told of his researches in experimental physiology and of his great friendship for Pasteur, whom he encouraged in his investigations on vaccination against rabies, Vulpian himself having performed under the eyes of Pasteur the first vaccination, owing to the fact that Pasteur did not have perfect control of his hand movements. Monday, a visit was paid to the former services of Vulpian, and of Pinel in the Hôpital de la Salpêtrière, and a special meeting of the Société médico-psychologique was held. Tuesday, the Société de neurologie held a formal session, and the Academy of Medicine, in extraordinary assembly, listened to the eulogies of Vulpian and Pinel under the chairmanship of M. Herriot, minister of public instruction. In the evening a banquet was given in honor of the foreign delegates. Wednesday, at the eighth international neurologic convention held at the Hôpital de la Salpêtrière, MM. Lhermitte and Tournay read papers on normal and pathologic sleep. In the afternoon, there was an official reception of the whole assembly at the Hôtel-de-Ville de Paris. Thursday, at a second session of the international neurologic convention, papers were presented by Klejn of Utrecht and Hautant of Paris on the means of clinical exploration of the vestibular apparatus.

Vascular Sympathectomy to Combat Varicose Ulcers

M. Cotte, professor at the Faculté de médecine de Lyon, following the example of Leriche in the use of arterial sympathectomy, applied the method to the femoral artery in two patients with rebellious varicose ulcers. He secured excellent results and rapid spontaneous cicatrization. However, in one case he had first improved the local condition by diathermy and electric treatment, applying at the same time extirpation of the saphenous vein; in the second case he had applied Thiersch skin grafts. While the treatment was admittedly complicated, M. Cotte observed that the results were more rapid and more complete than when sympathectomy was not performed simultaneously. At the meeting of the

Société de chirurgie de Lyon, at which the communication was presented, M. Bérard confirmed in all respects, on the basis of his own personal observations, the conclusions of M. Cotte.

Special Rai'way Coaches for the Transportation of Invalids

The railway company operating between Paris and Lyons, together with ports on the Mediterranean, is a line that transports every year a large number of patients, for its trains ply to and from the Riviera, which is much frequented by convalescents and the tuberculous. There has been in the past considerable criticism of the railway company in this connection, because of the danger of spreading disease among the other passengers. All the company was able to do was to subject the interior of its coaches to frequent and thorough disinfection. But it has recently constructed a special type of car for the transportation of patients which is a model of convenience. The patient is furnished a room 4.5 meters long by 2 meters wide, with an air space of 22 meters, and with a lavatory and toilet adjoining. The room contains a low, polished brass bedstead, which can be dismounted at the will of the patient. The head of the bed is usually placed against the partition of the lavatory in order to allow circulation on three sides. The bed is supplied with a comfortable mattress and springs, which may be easily disinfected. Opposite the patient's bed is another brass bed, placed transversely and transformable into a couch. The patient may therefore have near him, both day and night, the person who is taking care of him. In the patient's room all projections that might serve as dust catchers are avoided. All the corners are rounded out for a similar reason. The walls, the ceiling and the floor all consist of washable material that can be disinfected after each journey. The rugs and the window curtains are of washable fabrics. In each long side of the room there is a large double door to facilitate the admission of the patient. One of the doors, which opens directly into the corridor, may be blocked, in the presence of a contagious disease, to effect complete isolation. Light enters through large windows projecting outward. It may be dimmed by curtains of washable fabric, or completely shut out by means of blinds. The electric light fixtures, placed in the ceiling, make it possible to illuminate the room brilliantly; to have a soft, dim light, or to make the room completely dark. The patient has, furthermore, a reading lamp at the head of his bed, which makes it possible to shut off the light from the ceiling, if desired. Protection against variations of temperature is secured by the use of cork strips to stop up chinks in the walls and the floor and by double windows. When the two window panes are raised, the layer of air between them prevents the dissipation of heat and the penetration of the cold. The double windows prevent also, in winter, the condensation of frost on the window panes. Immense radiators with smooth walls (a new system) cover the two long sides of the room, under the windows. With this equipment a warm temperature can be maintained within even though the mercury drops to the lowest level. The radiators are supplied with air taken from the outside and filtered through layers of cotton, so that ventilation is accomplished with air from which all dust is removed. The radiators may be used, furthermore, in summer to cool the air, ice-water being forced through them in place of steam. The cork strips in the walls and floor serve likewise to deaden the noise and to absorb the shock. The lavatory adjoining the patient's room contains a toilet seat and flushing tank and a stationary bow l with hot and cold water. In case the patient has an infectious disease, the toilet seat is supplied with an hermetically sealed receptacle in order to prevent contamination of the roadbed or of the trucks with infectious matter. The receptacle is thoroughly disinfected at the end of each journey. The service room is supplied with hot and cold water, an icebox, a water-bath, an electric heater, an electric chafing-dish for the preparation of foods and beverages, a medicine chest, a linen cupboard, a cupboard for dishes, and an air-tight receptacle for soiled linen. The car is provided also with a Rouvillois stretcher for carrying persons severely injured or helpless patients. The stretcher can be sent for the patient, the patient can be transferred to the bed in the railway car, and on reaching his destination can be carried on the litter to his home or hospital.

PRAGUE

(From Our Regular Correspondent)

June 1, 1927.

Venereal Disease

Under the Czechoslovak law concerning venereal diseases, only the cases which occur in patients who have lapsed in treatment or those who have not complied with the orders given to them by the physician must be reported to health authorities. The central health authority may make the reporting of all cases of venereal diseases obligatory for a limited period of time, provided the names of patients are not required. This provision was made in order to make it possible for the health administration to collect information on the prevalence of venereal diseases in the country. The first country-wide reporting was carried out in February, 1921. Because the law relating to venereal diseases was not in force at that time the reporting was optional. Nevertheless its results were good. More than 21,000 venereal cases were reported. The second reporting, along similar lines, was organized in February, 1926, under the provisions of the law. In this instance, reports were requested only of cases which came under treatment for the first time in the course of the month. The results of the second reporting have been published recently and have shown considerable reduction in the incidence of fresh venereal infections in the course of the last few years. The reduction in the incidence of syphilis for both sexes amounts to 50 per cent; of gonorrhea, around 10 per cent; of chancroid, about 70 per cent. Since the second reporting was carried out under the provision of the law, it was more complete than the first one.

The first reporting was carried out when legitimatized prostitution was still in force. In the middle of 1922, legalized prostitution was abolished. If the opponents of abolition had been right in their assumptions by 1926 the deleterious effects of abolition would have shown themselves in the incidence of venereal infections. The high incidence of infection of married women has decreased. This shows that the conditions following the war were responsible for this phenomenon. Infected soldiers who came back from military service carried the infection into their families. Prostitution has decreased but, on the other hand, extramarital relations have come to the forefront. This can be explained by the measures that have been taken against prostitution as a profession, while the greater freedom for women in present-day society has led to the spread of venereal infection among them. While in the first reporting prostitution was the chief source of infection for men, in the second reporting extramarital relations with nonprostitutes occupy the first place.

Death of Janosik

The death of Prof. J. Janosik of the Czech medical faculty of Prague was announced, May 10. Professor Janosik was the founder of the school of Czech anatomists and histologists. His whole career was connected with the development of the Czech medical faculty of Prague. Born in 1856 in Moravia, he obtained his medical education in Prague. Since 1893 he had been chief of the anatomic institute of

the Czech medical faculty in Prague. Under his guidance the whole present generation of Czechoslovak physicians was introduced into the study of medicine. He established his reputation through his studies on the development of the genito-urinary organs and of the suprarenal glands. He has also written textbooks of anatomy and histology, respectively, which have become standard reference books for the whole Czechoslovak medical profession.

Masaryk League

The Masaryk League Against Tuberculosis recently reviewed at its annual meeting its activities of last year. While the tuberculosis mortality for 1924 was at the low figure of 190 per hundred thousand, it has increased since that time. Last year's mortality was 196 per hundred thousand. This has occurred in spite of the increased activities of the league. At present the league has local branches in 293 communities, including all the provinces of the country. The chief activities of the local branches were concerned with educational campaigns. Dispensaries exist in 179 places. The whole league has more than 37,000 paying members. The public contributes during the week of the annual spring drive. The organization of regional conferences and public health exhibits has proved effective in spreading interest in the work of the league. A course for physicians and another for public health nurses was organized last year. Special effort was made last year to obtain cooperation between the league and the sickness insurance organizations. In many instances a contract was made according to which members of the insurance organization are to be supervised by the dispensaries. In this way, the campaign against tuberculosis was assured of uniformity of method, a desirable condition which would be endangered if the insurance bodies had organized an independent campaign. The activities of the league have been extended to include protection of children who are exposed to tuberculosis. Summer camps and preventoriums have been established, partly independently and partly in connection with other child welfare agencies. The league had to continue to pay the fees of indigent consumptives in tuberculosis hospitals although this is one of the least productive expenditures. The league has continued its efforts for the formulation of a special law relative to the campaign against tuberculosis. The time for such a law seems to be ripe because it is felt that voluntary support should be supplanted by official activities and optional cooperation by compulsion.

Title of Specialist

The ministry of health recently has been brought before the supreme court by the chamber of physicians of Moravia because the ministry has given to a physician who applied for it the right of using the title of "specialist." Up to the present the usage in this country has been that the title of specialist might be given by the chambers of physicians. These organizations exist as independent autonomous bodies in each of the provinces. The supreme court upheld the ministry of health. As a result, the ministry of health has issued rules and regulations according to which the title of specialist may be granted. Branches of medicine in which the title of specialist can be given are internal diseases, diseases of the heart and the vessels, diseases of the lungs, tuberculosis, diseases of metabolism, neurology, psychiatry, physical therapy, roentgenology, balneology, pediatrics, otorhinolaryngology, ophthalmology, surgery, orthopedics, urology, gynecology, dermatology, venerology and medical laboratory methods. A combination of several of the branches enumerated is allowed only in the instances of allied specialists, for each of which a separate and equivalent qualification shall be required by the authorities. Those who apply for the title of specialist shall produce a certificate showing that the applicant, after his graduation in medicine, has spent at least two years in surgery, gynecology, ophthalmology and internal diseases, and three years in an institution where he has had a chance to acquire a thorough practical knowledge of the branch of medicine in which he wants to specialize. University institutes and departments of large hospitals are considered as institutions offering the necessary facilities for training. Internship only in such institutions can be credited in the set probation period. Courses in the special branch of medicine given in similar institutions should not be longer that one fourth of the probation period. Experience in foreign countries is equivalent to that at home. A person who has obtained the right to use the title of specialist but who has not practiced the specialty for a period of five years loses the right to use the title. Those who wish to practice a medical specialty must announce their desire to the provincial health department, which has the right to examine the documents of applicants and to refuse or accept their qualifications.

Better Housing Week

For the first week of May the Health Week of the German population in Czechoslovakia was organized. The purpose of the campaign was to demonstrate that healthy housing is of capital importance for the prevention of sickness and that much can be done in order to improve housing in spite of the present adverse financial situation. Much could be achieved if the space available in many of the family apartments was used in a rational way. In many families, the best room is set aside for special occasions, such as the visits of friends, while it is not used at all by the family itself. The standards of the American home and the American family house were given wide publicity in lectures presented during the week. An office has been opened in Prague where instruction is given concerning advantageous ways of obtaining the necessary capital for erecting a house and concerning plans for its construction.

BERLIN

(From Our Regular Correspondent)

June 4, 1927.

Meeting of the German Surgical Society

The congress of the Deutsche Gesellschaft für Chirurgie was held in Berlin, April 20-23, 1927, under the chairmanship of Küttner of Breslau. The first main topic on the program was: "Newer Points of View on the Preparation and the After-Treatment of Persons Operated on." Rost of Mannheim gave a survey of the deaths occurring during the past four years in the surgical department of the Mannheimer Krankenhaus. Approximately a third of the deaths were due to infection and injuries, a third to tuberculosis and malignant tumors, and a third to peritonitis, operations on the stomach and gallbladder, etc. Ten per cent of the deaths of the last group were due to heart failure, which shows the need of a more careful estimate of circulatory conditions before an operation is underaken. In the testing of heart function carried out during the last nine months on patients about to be operated on, as reported by Schrumpf, Gönczi, Mosler, Katzenstein and Kauffmann, it was found that more hearts than was commonly supposed were unable to function normally. A diseased heart should be treated with digitalis before the operation. The indiscriminate administration of digitalis to all persons who are to be operated on is, however, reprehensible. The newer heart remedies were discussed briefly; also the importance of camphor in the treatment of pneumonia, of quinine and quinidine in exophthalmic goiter, of epinephrine in sudden heart failure, of strychnine and caffeine to bring about contraction of the vessels, and of amyl nitrite, glyceryl trinitrate and papaverine in high blood pressure was emphasized. For the increase of embo-

lism in recent years, and, more particularly, for the outbreak in November and December, 1926, no definite cause has been discovered. That certain types of persons are predisposed to embolism could not be proved. Against postoperative pneumonia there is as yet no sure prophylactic nor any reliable remedy. The newer remedies (pneumococcus serum, calcium chloride urea, injection of ether or patient's own blood, inhalation of carbon dioxide, roentgen irradiation, etc.) have, however, proved effective in many cases. The changes in the acid-base equilibrium and the composition of the protein bodies after anesthesia and operation must be noted. Acidosis in itself does not work harm, but, just as the disturbances in protein metabolism, is to be taken as evidence that the bodily economy has undergone extensive and far-reaching changes. The recommended infusions of dextrose, with and without insulin, and the ingestion of sodium, do not influence postoperative disturbance of metabolism but are of value in that they protect the liver against deprivation of glycogen. If severe vomiting occurs, sodium chloride must be given owing to the reduction of that element. Infusions by the drip method are recommended, following operations. Ringer's solution and normosal are liable to cause chills, so that the author has gone back to physiologic sodium chloride solution. Ingestion of liquids after operation is very important (fever in children due to thirst). Of great importance is the correct preparation of the intestine (not too strong cathartics) and prophylaxis of postoperative paralysis of the intestine (cholin, hypophysin, solution of pituitary). One thing that is much neglected before operations is the preparation of the buccal cavity, although that is a matter of considerable importance. Likewise, the mutual relations between physical and mental conditions must not be neglected (shock, fright psychoses, deliriums, fear and its sequels). The proper furnishing of the sickroom aids the patient just as the correct use of hypnotics and anodynes. Of great importance is also a correct diet for surgical patients, both following the operation and later. In large hospitals, the nurse in charge of the diet kitchen should visit the patient along with the physician and serve as mediator between the desires of the physician, the patient and the management. The creation of a diet kitchen of one's own is also both feasible and advisable. In order that an operation may be successful, good and not too short preparatory treatment, as well as a suitable general after-treatment, as distinct from the special wound treatment, which the speaker did not discuss in detail, is needed.

Concerning postoperative psychoses, which develop in about 0.2 per cent, the male sex predominating, Volkmann of Halle reported that two thirds of the cases recorded in the literature and twelve of his own cases belong to the excitable type, and one third to the melancholic type with thoughts of suicide. Treatment, for the most part, can be only symptomatic. Caution is indicated if psychoses have occurred in the family history or in the patient himself on previous occasions, and when there is great fear of the operation.

Taking up the subject of lung surgery, Sauerbruch of Munich discussed the origin and the surgical treatment of bronchiectasis. Whereas formerly it was the general belief that bronchiectasis developed in association with inflammatory changes in the lungs, the fact that in 80 per cent of the cases the involvement concerns the left lower lobe gives food for thought. Careful researches have shown that inflammatory changes do not ordinarily exist and that everything points to congenital origin. The embryologic development of the lungs shows also that, to the right, nothing opposes lung development, whereas, to the left, the heart interposes itself like a wall and that, in some cases, the duct of Cuvier opposes itself as an obstacle to bronchial development. Depending on the time when the constriction takes place, there develop large cysts, bronchiectasis or multiple smaller cyst formation. Pathologic symptoms do not ordinarily appear until an infection develops at the site of these anatomic changes. Relief from the severe suffering to which these chronic patients are exposed can be secured only through a radical operation, resection of the left inferior lobe. The author presented four patients who had been cured in that manner.

Voelcker of Halle spoke on the operative treatment of bronchial asthma, and, more particularly, on the earlier type associated with a rigid thorax. He discussed in detail the position in such cases of the ribs in relation to the spinal column, as plainly shown in the roentgenogram, and presented a cured patient in whom he had resected paravertebrally the first to the tenth ribs.

Haberland of Cologne called attention to remote injuries following section of cervical glands. In experiments on dogs, he demonstrated the reduced performance of the heart following division of the stellate ganglion. Kümmell of Hamburg emphasized, on the other hand, that by his operation, which is indicated only in the most severe cases, he effected a cure in 60 per cent of the cases. The unpleasant secondary manifestations have been eliminated since he no longer removes the cervical ganglion but only the stellate ganglion. He welcomes the Voelcker operation, which is indicated in the presence of a rigid thorax, for he admits that it will help to reduce the percentage of failures resulting from his own operation.

SURGERY OF THE PANCREAS

The second main topic on the program was surgery of the pancreas. Schmieden, surgeon of Frankfort-on-the-Main, after a brief historical introduction, in which he made mention of the well known monograph of Körte, described the anatomic picture as it is presented in necrosis, hemorrhage and inflammation, and then took up the subject of pathogenesis. He enumerated the following possible modes of origin: infection (1) from the duct of Wirsung; (2) from the duct of Santorini through the contents of the duodenum; (3) from the common bile duct; (4) through arterial embolism; (5) through retrograde venous circulation; (6) through traumatic insult; (7) through duodenal ulcer (direct transmission to the head of the pancreas); (8) through a duodenal diverticulum in the pancreas. He emphasized the explosive nature of the origin of the disease, which may be precipitated or released by the passing of a small stone past the papilla. Stasis or infection of the pancreas may be brought about by any of the diseases of the biliary system, so that these may be designated as associate diseases. In every operation on the stomach or duodenum there is danger of the pancreas being injured and of a resulting pathologic condition of that organ. The excision of a penetrating ulcer should be avoided, if possible, owing to the danger of injury to the pancreas. But in addition to these well known modes of origin there appears to be an obscure, imperfectly understood factor associated with the development of necrosis of the pancreas, which may be referred to as a pancreas diathesis. Among other causes the speaker mentioned briefly infestation with ascarids, meat and sausage poisoning, and metastatic conditions, especially following proctitis and remote operations. The main danger from acute pancreas conditions consists, first, in hemorrhage from the omental vessels resulting from their digestion; secondly, in fat necroses, which develop, at times, after about sixteen hours, the transmission occurring through the lymph paths or by direct contact, and, thirdly, in peritonitis which follows, together with sepsis. Early operation is the operation of choice. The prognosis as to the course is uncertain and it is therefore impossible to state what the interval of the condition will be. In the event of a severe collapse, and

likewise in late cases, if the pulse is strong, one may occasionally wait until an abscess or cyst develops. However, it is not advisable, if there is a suspicion of a pancreas affection and severe abdominal symptoms, to wait until the complete clinical manifestations of the disease have developed. Acting on the principles here laid down, the author succeeded in effecting cures in 48.8 per cent of his cases, which leaves still the very high mortality rate of 51.2 per cent. The object of the operation is to remove the exudate and to reduce the gland to a state of quiescence through incision of the capsule (sometimes incision of the gland itself, with avoidance of the excretory ducts). Often opposing incisions are needed, and the operator must be on the lookout for intraperitoneal and retroperitoneal pus pockets.

Von Bergmann of Berlin emphasized that animal experimentation had increased our knowledge of the nature of pancreas disease, because it has proved possible to produce in animals what we observe in man. The essential thing is the ferment that is formed in the gland. Speaking figuratively, the powder lies in the gland all ready to be touched off, and only a slight happening is required to cause the explosion. The bacterial factor must not be neglected, but it is not a necessary precondition. Autodigestion is a prime factor. The previous ingestion of trypsin preparations has produced sometimes a measure of immunity, but it has not proved possible to establish a passive immunity. Von Bergmann, also, holds the view that in severe acute attacks a cure can be effected only by prompt operative intervention. On inquiring carefully into cases it will be found that occasionally several lighter attacks have preceded the present severe attack. Frequently after attacks of gallbladder disease one hears of pains radiating to the left side. The speaker is of the opinion that such pains indicate involvement of the pancreas. Greater attention should be paid to such disturbances than has been given in the past. Determination of Head's zones is important. Diastase examination of the blood and the urine, and testing of the duodenum (pain attacks following ether) are excellent diagnostic aids. The largest percentage of diseases of the pancreas comes under the head of cholecystopathies (dyskinesia, cholecystitis and cholelithiasis). It does not require a large stone to produce a pathologic condition. As a rule, there is a neuropathic complex, which causes bile and trypsin to be shunted about without the correct entrance into the duodenum being found. Also cholecystectomy may create a predisposition to pancreas disorders that develop later. A long period of postoperative dieting and treatment with trypsin is needed in the above described light attacks, for it is possible that, if the light attacks are treated, the number of severe attacks may be reduced.

(To be continued)

Marriages

ABRAHAM ALLEN GOLDBLOOM, Pittsburgh, to Miss Ruth Held, of New York, at Berlin, Germany, April 10.

LEO C. CULLIGAN, Rochester, Minn., to Miss Jeane Marie Dennis of Marquette, Mich., June 1.

HOLCOMBE H. BURT, South Boston, Va., to Miss Martha Lee Adams of Blackstone, June 15.

JOHN M. BLADES to Miss Anna Mae Sloan, both of Butler, Ky., June 3, at Somerset.

DONNELL B. COBB, Goldsboro, N. C., to Miss Sara Elizabeth Borden, June 4.

GUY WATTS WAGNER to Miss Blanche E. Thomas, both of Chicago, June 4.

HENRY GOODFRIEND, Boise, Idaho, to Miss Rosa Marks, June 5.

Deaths

William Sweeny Stucky ✠ Lexington, Ky.; University of Michigan Medical School, Ann Arbor, 1908; member of the American Academy of Ophthalmology and Oto-Laryngology; president of the Fayette County Medical Society; on the staffs of the Good Samaritan Hospital and the Odd Fellows Orphans' Home; aged 43; died, June 10, of cerebral hemorrhage.

Edward Arthur Bowles ✠ Hebron, Neb.; Detroit Homeopathic College, 1903; Medical Department University of Illinois, Chicago, 1905; past president of the Thayer County Medical Society; part owner and surgeon of the Blue Valley Hospital; county physician; aged 47; died suddenly, June 3, at a hospital in Omaha, of chronic valvular heart disease.

Clarence Couch Elebash, Selma, Ala.; Medical Department of the Tulane University of Louisiana, New Orleans, 1909; member of the Medical Association of the State of Alabama; served during the World War; on the staff of the Vaughan Memorial Hospital; aged 38; died, June 2, at Asheville, N. C., of pulmonary tuberculosis.

Albert Pearson Woodward, San Francisco; Bellevue Hospital Medical College, New York, 1886; for many years professor of dermatology, College of Physicians and Surgeons of San Francisco; formerly on the staff of the Hospital for Children; aged 72; died, May 16, at Stockton, Calif., of cerebral arteriosclerosis.

Joseph R. Mountain ✠ Connersville, Ind.; University of Michigan Medical School, Ann Arbor, 1898; past president of the Fayette County Medical Society; on the staff of the Fayette Memorial Hospital; aged 55; died, June 10, at the Clinic Hospital, Cleveland, following an operation for abscess of the liver.

Robert Madison Slaughter, Washington, D. C.; College of Physicians and Surgeons, Baltimore, 1879; member of the Medical Society of Virginia; formerly member of the state board of medical examiners of Virginia; aged 70; died, June 3, at a sanatorium in Silver Spring, Md.

Frank Maxwell McCartney ✠ Denver; Gross Medical College, Denver, 1902; on the staff of the Denver General Hospital and for ten years chief of staff of St. Anthony's Hospital; aged 52; died, June 5, of septic pneumonia and erysipelas of the face.

Mary Miller Battels, Ashtabula, Ohio; Universiy of Michigan Medical School, Ann Arbor, 1888; member of the Ohio State Medical Association; aged 66; died, June 9, at the Ashtabula General Hospital, of injuries received in an automobile acicdent.

George Allen Lightle, Ashland, Ill.; College of Physicians and Surgeons, Keokuk, 1896; member of the Illinois State Medical Society; aged 57; died, June 6, at St. John's Hospital, Springfield, of intestinal obstruction following a cholecystectomy.

George Rescarick Moore ✠ Trenton, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1897; for twenty-eight years on the staff of the Mercer Hospital, where he died, June 6, following an operation for acute appendicitis, aged 56.

Robert A. Cushman, Princeton, Ind.; Medical College of Indiana, Indianapolis, 1902; member of the Indiana State Medical Association; formerly mayor of Princeton; aged 51; died, June 7, at the Walker Hospital, Evansville, of uremia.

Nathan Lytle Clarke ✠ Meridian, Miss.; Louisville (Ky.) Medical College, 1883; formerly professor of theory and practice of medicine, Mississippi Medical College, Meridian; aged 70; died, May 17, of hemorrhage, due to gastric ulcer.

Albert Theodore Kaupp ✠ Wenatchee, Wash.; Jefferson Medical College of Philadelphia, 1891; on the staffs of the Central Washington Deaconess Hospital and St. Anthony's Hospital; aged 63; died, May 28, of chronic poliomyelitis.

Marcus Denis Cronin ✠ Albany, N. Y.; Albany Medical College, 1907; formerly instructor in surgery at his alma mater; on the staff of St. Peter's Hospital; aged 47; died, May 29, of chronic myocarditis and pulmonary edema.

Jeremiah Francis Calef ✠ Middletown, Conn.; Yale University School of Medicine, New Haven, 1880; past president of the Connecticut Medical Examining Board; on the staff of the Middlesex Hospital; aged 71; died, June 8.

John Shackford Grouard ✠ Nantucket, Mass.; Harvard University Medical School, Boston, 1889; on the staff of the

Nantucket Cottage Hospital; aged 60; died, May 31, in Boston, following an operation on the gallbladder.

Lewis Byron Dawley, Westtown, N. Y.; Eclectic Medical Institute, Cincinnati, 1880; member of the Medical Society of the State of New York; aged 65; died, June 2, at the Roosevelt Hospital, New York, of splenomegalia.

George Wootson Lacy, Kirkmansville, Ky.; University of Louisville School of Medicine, 1909; member of the Kentucky State Medical Association; aged 43; died, in June, at a hospital in Louisville, following a long illness.

Arthur Thomas Pritchard ✠ Asheville, N. C.; Jefferson Medical College of Philadelphia, 1905; served during the World War; on the staff of the French Broad Hospital; aged 45; died, May 26, of heart disease.

John Paxton Tillery, Knoxville, Tenn.; University of Tennessee College of Medicine, Memphis, 1889; member of the Tennessee State Medical Association; aged 63; died suddenly, May 29, of heart disease.

Robert T. Glassell, Bowling Green, Va.; University of Maryland School of Medicine, Baltimore, 1886; member of the Medical Society of Virginia; aged 72; died, June 4, of carcinoma of the parotid gland.

William Routt Cravens ✠ Bloomfield, Ind.; Kentucky School of Medicine, Louisville, 1892; Central College of Physicians and Surgeons, Indianapolis, 1896; aged 58; died, June 4, of cerebral hemorrhage.

Isaac S. Bowers, Perrysburg, Ohio; Detroit Medical College, 1881; member of the Ohio State Medical Association; part owner of a hospital bearing his name; aged 70; died, June 3, of heart disease.

Samuel Van Kirk Kennedy ✠ Warren, Ohio; Ohio Medical University, Columbus, 1905; on the staffs of the Warren City, and St. Joseph's Riverside hospitals; aged 45; died, May 28, of pulmonary tuberculosis.

James Pervine Atwood, Baker, Ore.; Willamette University Medical Department, Salem, 1870; College of Physicians and Surgeons, New York, 1874; aged 81; died, June 15, of cerebral hemorrhage.

Lamar Matthew Power, Detroit; College of Physicians and Surgeons, Chicago, 1903; aged 48; died, June 5, at the Providence Hospital, of injuries received when he fell from a second story window.

Marion MacMillan Kershaw, Augusta, Ga.; Medical College of the State of South Carolina, 1903; member of the Medical Association of Georgia; aged 50; died, June 1, of tuberculosis of the hip.

George F. Kelly ✠ Milwaukee; Chicago College of Medicine and Surgery, 1915; formerly on the staff of the Marquette University Hospital; aged 45; died, May 30, at a hospital in Wauwatosa.

Michael Edward O'Donovan ✠ New York; Medical Department of Columbia College, New York, 1891; aged 70; died, in June, of spinal ostearthritis, acute myelitis and carcinoma of the right lung.

Edward L. Mitchell ✠ Monmouth, Ill.; Rush Medical College, Chicago, 1882; aged 71; died, June 9, at Augustana Hospital, Chicago, following an operation for intestinal obstruction.

Louis Desire Onesiphore Jacques, Worcester, Mass.; Laval University Faculty of Medicine, Quebec, Que., Canada, 1895; on the staff of the Louis Pasteur Hospital; aged 54; died, May 30.

John Wesley Anderson, Odon, Ind.; Kentucky School of Medicine, Louisville, 1881; member of the Indiana State Medical Association; aged 72; died suddenly, June 3, of heart disease.

Henry S. Llewellyn, La Grange, Ill.; Hahnemann Medical College and Hospital, Chicago, 1892; Chicago Homeopathic College, 1893; aged 68; died suddenly, June 21, of heart disease.

Lewis Duncan Mason, Brooklyn; Long Island College Hospital, Brooklyn, 1886; member of the Medical Society of the State of New York; aged 84; died, June 11, of edema of the lungs.

George Johnson Boyd ✠ Beaver Falls, Pa.; University of Michigan Medical School, Ann Arbor, 1889; on the staff of the Providence Hospital; aged 66; died, May 29, of parotitis.

William Adrian Thomas, Detroit; Ohio State University College of Medicine, Columbus, 1925; aged 29; died, April 30, at the Delray Industrial Hospital, of acute endocarditis.

William Seitz, Portsmouth, Ohio; Eclectic Medical Institute, Cincinnati, 1908; aged 48; died, in June, at a hospital in Cincinnati, of hiccup following an operation.

Robert Kains, St. Thomas, Ont., Canada; Trinity Medical College, Toronto, 1872; M.R.C.S., England, 1875; for ten years county jail surgeon; aged 78; died, May 3.

Oscar Turner Harris, Grayson, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1901; aged 52; died, May 28, at Clarkston, of cerebral hemorrhage.

Norman Call, Brookline, Mass.; Medical Department of Columbia College, New York, 1872; aged 82; died in May, at the home of his niece in Brunswick, Maine.

Louis E. Alderman, Brooklyn; Eclectic Medical College of the City of New York, 1895; aged 56; died in April, of skull fracture received in an automobile accident.

Joseph Beisman ✠ Detroit; St. Louis Medical College, 1890; aged 63; died, May 31, at the Highland Park (Mich.) General Hospital, of cerebral hemorrhage.

Charles Theophilus Maas, New Brunswick, N. J.; Medical Department of the University of the City of New York, 1886; aged 75; died, June 2, of hemiplegia.

Charles Dwight Freeman ✠ Medina, Ohio; Bellevue Hospital Medical College, 1884; aged 74; died, April 22, at the Lodi (Ohio) Hospital, of arteriosclerosis.

Richard Rutt Hopkins, Toronto, Ont., Canada; Trinity Medical College, Toronto, 1887; on the staff of the Grace Hospital; aged 72; died suddenly, May 5.

Noah E. Brumbaugh, Seven Mile, Ohio; Eclectic Medical Institute, Cincinnati, 1859; Civil War veteran; aged 94; died, May 23, as the result of a fall.

William Ulysses McKenzie, Centerpoint, Tenn.; Vanderbilt University School of Medicine, Nashville, 1877; aged 72; died, April 2, of heart disease.

Robert Hudson Crabb ✠ Leonard, Texas; University of Tennessee College of Medicine, Memphis, 1892; aged 67; died, June 5, of heart disease.

Clarence Edwin Vaughan, Athol, Mass. (licensed, Massachusetts, 1924); aged 30; died, June 11, of injuries received in an automobile accident.

William A. Halbert ✠ Springfield, Ill.; College of Physicians and Surgeons, Keokuk, 1882; aged 66; died, May 30, at St. John's Hospital.

Thomas H. O'Rourke, Detroit; Detroit College of Medicine and Surgery, 1896; aged 64; died, May 21, of pneumonia, following influenza.

Magnus Wilkie Kyde, Helena, Mont.; Rush Medical College, Chicago, 1921; aged 31; died, June 7, of potassium cyanide poisoning.

Robert Howell Preston Wright, Junction, Texas (registered, Texas, under the Act of 1907); aged 55; died, June 9, of acute myocarditis.

Nathan W. Melton, Wayne City, Ill.; American Medical College, St. Louis, 1883; aged 85; died, June 17, of cerebral hemorrhage.

Jacques Daniel de Chantreau ✠ San Francisco; University of Paris, France, 1891; aged 61; died, June 10, of chronic myocarditis.

Jacob Oren Malsbury, Peru, Ind.; Kentucky School of Medicine, Louisville, 1890; aged 62; died, May 21, following a long illness.

Helena M. Mullhaupt, St. Marys, Pa.; Woman's Medical College of Pennsylvania, 1880; aged 67; died, May 26, of pneumonia.

John C. Taylor, Canton, Ky.; University of Tennessee College of Medicine, Memphis, 1889; aged 59; died, May 30, of nephritis.

Daniel Lyons, Ashland, Ill.; American Medical College, St. Louis, 1883; aged 79; died, May 26, of carcinoma of the nose.

Robert P. R. Huyett, Shillington, Pa.; Jefferson Medical College of Philadelphia, 1878; aged 71; died, May 3.

Harry William Purdy, Nogales, Ariz.; Bellevue Hospital Medical College, New York, 1882; died, March 24.

Abner A. Alford, Newhope, Ark.; Fort Worth (Texas) School of Medicine, 1904; aged 72; died, May 14.

E. D. Ehrman, Rockport, Ind. (licensed, Indiana, 1897); aged 73; died, June 8, of cirrhosis of the liver.

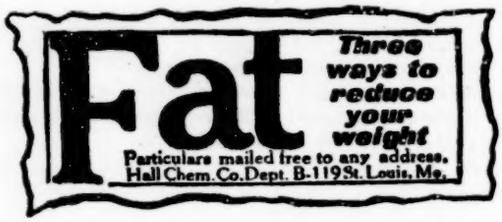
Adolph Hans Olsen, Oak Park, Ill. (licensed, Illinois, 1898); aged 57; died, May 15.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

TWO OBESITY FAKES DODGE FRAUD ORDERS

Hall's Tablet Triturates.—The Hall Chemical Company of St. Louis has for many years sold a fake cure for obesity, which it called "Hall's Tablets Triturates." As is common in the nostrum business, the composition of the preparation has varied. When analyzed in 1920, the product was found to be essentially a mixture of ginger, nux vomica, aloes and chalk. In 1926, the essential active ingredients of the Hall preparation were aloes, ginger and phenolphthalein.



Jan. 24, 1927, the Post Office Department called on the Hall Chemical Company to show cause why a fraud order should not be issued against it, and gave the concern a month to prepare its case. In about two weeks' time A. N. Gaebler, proprietor of the Hall Chemical Company, submitted an affidavit to the Post Office Department declaring that the sale through the mails of Hall's Tablets Triturates had been absolutely discontinued and abandoned, and would not be resumed under that name, or any other name. He declared, further, that he had directed the Postmaster at St. Louis to return to the writers all mail hereafter received, addressed to the Hall Chemical Company, with the legend "Out of Business" stamped or written on the envelop.

Slends Chewing Gum.—Readers of this department of THE JOURNAL may remember that in the issue of Nov. 13, 1926, under the title "More Fat Cure Fakery," there was an article

dealing with two quack "obesity cures" of the chewing gum type. One of these was "Slends," put on the market by Slends, Inc., and by the Heath Products, Inc. Slends was analyzed in the A. M. A. Chemical Laboratory and was reported to be essentially chewing gum (chicle), coated with varying amounts of a mixture containing sugar and phenolphthalein, flavored, and containing a small amount of vegetable extractives.

Sept. 14, 1916, the Post Office Department called on Slends, Inc., the Heath Products, Inc., and E. M. Heath, president, and C. L. Heath, secretary and treasurer, to show cause why a fraud order should not be issued against them for selling Slends through the mail, under representations that were alleged to be false and fraudulent. Jan. 3, 1927, Ernest M. Heath and C. L. Heath submitted an affidavit to the Post Office Department declaring that the business of selling Slends through the mails had been entirely discontinued and abandoned, and would not be resumed under that name or any other name, and that neither of these men would hereafter engage in the sale of any fat-reducing preparation through the mails.

There is, of course, nothing in the action of either the Hall Chemical Company or Slends, Inc., to prevent either, or both, of these concerns continuing to sell their products through the drug stores. This course of action has been taken before by quacks who have signed similar affidavits in order to avoid the unpleasant consequences of the issuance of fraud orders.

CACTINA PILLETS AGAIN

Twenty years ago preparations of *Cactus grandiflorus*—the Mexican night-blooming cereus—had considerable vogue, chiefly because of the extravagant advertising claims made for two preparations said to be derived from it—"Cactin" and "Cactina." Sollmann, in one of the chapters of his "Broader Aims of the Council on Pharmacy and Chemistry" (THE JOURNAL, July 4, 1908, p. 52) thus ironically describes the claims made for these preparations:

> "Should the heart be too slow, cactus quickens it; if the heart is too fast, cactus slows it; should the heart be too weak, cactus strengthens it; if the heart is too strong, cactus weakens it; does the heart wobble, cactus steadies it; if the heart is normal, cactus does not meddle with it."

In 1907, R. A. Hatcher discussed the conflicting evidence of those who had reported on the composition and action of *Cactus grandiflorus*, stating that he had been unable to find a single conclusive piece of pharmacologic work showing that the drug possesses any physiologic action whatever, and that, on the other hand, the work of Houghton pointed to its entire uselessness and that of Gordon Sharp showed it to be wholly inert (THE JOURNAL, Sept. 21, 1907, p. 1021).

In 1908, S. A. Matthews reported that when administered to a dog intravenously large doses of cactina cause a slight fall in blood pressure and depress both the respiration and circulation. He reported, further, that from experiments on guinea-pigs, rabbits and himself, cactin in one thousand times the recommended dose is physiologically inert (THE JOURNAL, March 21, 1908, p. 956; April 4, 1908, p. 1140).

In 1910, the Council on Pharmacy and Chemistry reviewed the evidence for the value of *Cactus grandiflorus* and concluded that there was no evidence to make any available preparation a reliable remedy (THE JOURNAL, March 12, 1910, p. 888). In 1910, also, E. P. Lyons and C. L. Quall made a large number of experiments with cactina on animals, on healthy men and on patients in bed, and were unable to demonstrate any effect on the heart beat or the circulation (THE JOURNAL, Aug. 6, 1910, p. 455).

Because previous work had been questioned on the ground that it did not deal with Mexican night-blooming cereus, Hatcher and Bailey in 1911 procured authentic specimens of the true Mexican variety and, using their own preparation as well as representative preparations bought in the open market, in a series of experiments on cats, dogs and frogs, conclusively showed the drug to be inert, obtaining no perceptible effect even from the administration of most colossal doses by mouth to the animals (THE JOURNAL, Jan. 7, 1911, p. 26).

As a result of the thorough exposure of the worthlessness of cactus preparations, proprietary houses have generally abandoned their exploitation. While "Cactin" (now called "Cactoid") is still offered for sale and is still the "joker" in a proprietary morphine-scopolamine preparation, no claims for it are advanced. In the case of "Cactina Pillets", however, the proprietor—the Sultan Drug Co.—still finds it profitable to continue advertising in a certain class of

so-called medical journals and to continue making the claims that have been so thoroughly disproved.

It is to be presumed that those who use Cactina Pillets do so because they have accepted the claims contained in the advertising at their face value, have done this without informing themselves of the published evidence, and have used this worthless preparation without adequately controlling the expected effects on their patients. To these, a report by Dr. Clifton B. Leech from the Cardiac Department of the Union Hospital in Fall River will be of interest (*Boston M. & S. J.*, March 10, 1927, p. 394). Dr. Leech first tried the drug in doses of from one to 300 pillets on groups of healthy persons including himself, and observed no effects. He then tested the pillets in patients presenting the signs and symptoms for which cactina is recommended—ten patients with extrasystoles, four patients with constrictive pain in the precordium, ten patients with paroxysmal, constrictive, substernal pain, five patients with effort syndrome, four patients with neurocirculatory disturbances, ten patients with myocardial weakness, and two patients with auricular fibrillation and marked congestive failure. In no case did he observe any beneficial or otherwise distinctive effect from the drug, and he concluded that Cactina Pillets are no more than a placebo, thus agreeing with Sollmann, who twenty years ago called the preparation a psychic cardiac tonic.

It is a sorry commentary on the intelligence of some members of the medical profession that it is necessary to do clinical and experimental work to prove that the moon is not and never was composed of green cheese. But it seems necessary.

Correspondence

GRADUATE TEACHING IN DERMATOLOGY

To the Editor:—Dr. Louis B. Wilson has performed a valuable service in his recent painstaking review of graduate medical education in Europe (THE JOURNAL, June 11). In his brief reference to dermatology in America, however, he has made some misstatements which show his unfamiliarity with the situation in this country.

"It is difficult to explain," Dr. Wilson writes, "why dermatology has been so slow in developing in America." With such a statement I must take issue, feeling that dermatology has developed as fast as other specialties, while in recent years it has made notable strides.

He is evidently not aware of the fact that the oldest dermatologic society in the world is the New York Dermatological Society, founded in 1869; also that the American Dermatological Association, founded in 1876, is the fifth in age of the sixteen component bodies of the Congress of American Physicians and Surgeons. Dr. Wilson might have been surprised to see three hundred or more at the opening meeting of the Section on Dermatology and Syphilology at the recent Washington session. He might be interested to know that at the recent annual meeting of the New York State Medical Society the newly organized Section on Dermatology and Syphilology had a larger attendance than any of the other special branches of medicine. Does he know of the flourishing condition of the section at the New York Academy of Medicine, where the attendance has been so overwhelming that it had to be limited by cards of invitation? Does he know of our most successful international congress of dermatology held in the country twenty years ago? Does Dr. Wilson know of the high regard in which the *Archives of Dermatology and Syphilology* is held by our European colleagues and that our official journal under various names has been published since 1870?

Dr. Wilson's statement that our imagined lack of progress "used to be thought" due to lack of material is hardly accurate. Whatever our shortcomings may have been, they were at least never due to lack of clinic material, which has always been most abundant.

The statement that "many of the larger cities in the United States are without competent dermatologists" is absolutely incorrect at the present time, as there are few cities of a hundred thousand or more without the services of a well trained physician in this branch of medicine.

Finally, I must take most emphatic issue with the statement that "very few places in the United States provide the graduate students with the opportunity of studying more than the mere rudiments of the specialty." At the present time thorough graduate instruction in dermatology-syphilology is given in a number of institutions scattered over the country. Such a list, comprising a dozen medical schools approved by the Council on Medical Education and Hospitals, has been published in THE JOURNAL. In New York City alone, graduate instrucation is given in three undergraduate colleges, two postgraduate institutions and one special hospital. It may be of interest to know that the first branch of medicine to be taught to graduates on an ambitious scale in Columbia University was dermatology. The great success achieved by this work under the late Dr. John A. Fordyce was followed by similar activities in other branches of medicine at Columbia. At the New York University and the Post-Graduate Hospital, complete courses of graduate instruction are now given in dermatology-syphilology, including clinical dermatology, histopathology, mycology, roentgen-ray and other forms of physical therapy, and photography. Similar instruction is given in both the graduate and the undergraduate departments at the University of Pennsylvania. One of the most successful schools for graduate teaching is that of the University of Michigan, where a most thorough graduate training is given during a residence of four years.

It is no longer necessary to go abroad for graduate instruction in this specialty. In fact, there are eminent teachers conducting graduate courses who themselves received all their training in this country. We are proud of the advances of recent years in this specialty, one of which is graduate instruction.

HOWARD FOX, M.D., New York.

THE COUNCIL ON PHYSICAL THERAPY

To the Editor:—At the last day's session of the Section on Orthopedic Surgery, during the recent Washington session, Dr. A. H. Freiberg of Cincinnati read a paper on the relationship of physical therapy to orthopedic surgery. It contained excellent points and was discussed by a number of men, all of whom agreed with Dr. Freiberg that heavy responsibility rests on orthopedic surgeons to set physical therapy straight. None of these men made the slightest reference to the Council on Physical Therapy, which is trying to solve the problem in a broad manner and to establish a proper relationship of physical therapy and the general profession. In contrast to the opinions voiced by some orthopedic men that a class of lay "physical therapeutists" be developed, working under their direction, the Council on Physical Therapy advocates that physical therapy be administered, or at least prescribed, by medical men especially trained in this field.

Dr. Joseph F. Smith of Wisconsin, whose resolution before the House of Delegates at the Atlantic City session in 1925 was responsible for the creation of the Council on Physical Therapy, happened to be present at the orthopedic session and, in subsequent conversation, shared with me his amazement at the fact that in spite of a number of excellent reports by and about the Council on Physical Therapy published in THE JOURNAL, its existence should still seem unknown to a whole section of the American Medical Association.

May it not be appropriate to call attention to the work of the Council? It endeavors earnestly to sift the chaff from the

wheat in physical therapy and place it within the reach of the entire profession for the best interests of their patients, and should command the fullest cooperation of every broad minded physician.

RICHARD KOVACS, M.D., New York.

DIAPHRAGMATIC PLEURISY ARACHNIDISM

To the Editor:—I have received from Dr. Emil Bogen an interesting reprint and copy of a letter to you relative to a case reported by me (THE JOURNAL, April 30, p. 1395) as one of bilateral diaphragmatic pleurisy simulating perforated gastric ulcer. Dr. Bogen suggests that it was a case of arachnidism. Such a diagnosis was considered before operation and the history of spider bite included as relevant. The day following operation, however, the appearance was that of a respiratory infection, with leukocytosis of 19,000; and this appearance became more marked as the respirations rose from 30 to 48 per minute. The later occurrence and persistence of definite, clear and unmistakable dry pleural friction rubs anteriorly, posteriorly and in the axilla on both sides at the level of the diaphragm just about indisputably establish a diagnosis of bilateral diaphragmatic pleurisy. To suppose an arachnidism also would necessitate the supposition that the pleurisy developed soon after the arachnidism and without producing any noticeable change in the picture—a view that appears to me unlikely. This belief has been strengthened by learning of a series of similar cases occurring in Philadelphia hospitals a few years ago, in several of which operations were performed only to have a final diagnosis of bilateral diaphragmatic pleurisy made.

GEORGE L. CARRINGTON, M.D., Durham, N. C.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SUICIDE IN CALIFORNIA

To the Editor:—What explanation can you give, if any, for the comparatively high suicide rate of cities located in California?

H. A. D., Buffalo.

ANSWER.—This inquiry was referred to Mr. L. E. Ross, Director and State Registrar, Bureau of Vital Statistics, California State Board of Health, who replies in part as follows:

"There has as yet been no satisfactory explanation of the fact that our suicide rate is about double that of the country as a whole. People are killing themselves more than twice as fast as in other states. It is not the natives who are doing it. One fourth of the people living in this state are natives; but only one seventh of the suicides are among natives. 'Normal' is about fifteen suicides per year in every hundred thousand adult population; but the rate in California is thirty-two. During the last three years no less than 2,600 people have killed themselves in this state." (This is from a survey made several years ago.) "The rate for natives was 15; for persons born in other states and living in California the rate was 24; and for the foreign-born it was 35.

"Some of the common causes for suicide are financial reverses, disappointment in love, ill health, impending disgrace, unemployment, fear and insanity. Data are not available to show the proportion of lives claimed by each of these causes, but in looking about for an explanation of our excessive suicide rate, we are inclined to attribute a heavy proportion to ill health. Large numbers of health seekers, especially among the tuberculous, have migrated to California, many of them arriving practically without funds, expecting to secure light employment to defray expenses. There is real tragedy in such cases. A substantial proportion of our high suicide rate can safely be assigned to this group, many of whom destroy themselves when they find that a salubrious climate will not do for them what medical science has failed to accomplish. Financial difficulties are no doubt worse among the males than the females, a larger proportion of men than women coming without funds sufficient for their support, which accounts partly for the excess suicide rate among the males in this state.

"Unemployment can scarcely be assigned any portion of the excess rate, except for the class just mentioned. However, the competition resulting from an excess labor supply is evidenced in the suicide rates for the different age groups. These conditions do not affect Californians any more than people in other states, and do not unduly contribute to our high suicide rate.

"The other causes, such as financial reverses, disappointment in love, and insanity, are no more common in one place than in another, and thus practically everything but ill health is eliminated. Is this alone sufficient to account for all the excess in the California suicides? It may be, but such is not believed to be the case. There are probably other reasons which cannot be discovered through analysis of the vital statistics."

TETANUS ANTITOXIN AND RABIES

To the Editor:—I have recently noticed that many practitioners and some hospitals, both homeopathic and allopathic, are using tetanus antitoxin in the prophylactic treatment of rabies. Is there any sound basis for this from either the theoretical or practical aspects?

ANDREW J. L. GUAY, M.D., Philadelphia.

ANSWER.—Tetanus antitoxin is without any effect in preventing rabies. There is no practical or theoretical basis for concluding that tetanus antitoxin can have any direct effect on rabies. The only conceivable reason for using tetanus antitoxin in persons bitten by animals suspected of being rabid would be to guard against the possibility of infection with the tetanus germ at the same time; but this would seem to be a rather remote possibility.

PRURITUS AFTER SULPHARSPHENAMINE

To the Editor:—I have a patient who, one week following the last treatment of a course of sulpharsphenamine, developed a general pruritus, which is very unpleasant. What can I do to relieve him? Please omit name.

M.D., Illinois.

ANSWER.—When a general pruritus develops from any of the arsphenamines it is a danger signal and any further use of arsphenamine should be cautious. Antipruritic applications may be comforting, such as starch baths, containing 2 liters of boiled starch to the bath. Or the patient may be sponged with calamine lotion, consisting of zinc oxide and calamine, each 30 Gm.; glycerin, 15 cc.; water, to make 500 cc. Or sponge with a liniment, such as olive oil, 200 cc.; lime water to make 500 cc. But the only way to stop the condition is to stop the arsphenamine, and the pruritus is a signal to stop the arsphenamine if it can be done.

PHOSPHATURIA

To the Editor:—What is the cause and treatment of a persistent phosphaturia that has existed for more than six months without signs or symptoms, other than a urinalysis, of its existence? Physical examination does not reveal anything, even focal infection. The patient is apparently a well, normal individual, and came to me on account of noting the whitish color of the urine while voiding. The patient is of normal weight, works every day, and does not complain of any trouble whatever. Repeated attempts to acidify the urine by different chemical agents, including sodium acid phosphate, have proved futile. The urine is absolutely loaded with the earthy phosphates and is precipitated when voided. There is no cystitis.

W. I. STOCKDON, M.D., Glendon, N. C.

ANSWER.—Phosphaturia cannot as yet be called a clinical entity, and opinion regarding its causation and treatment shows considerable diversity. Efforts should, of course, be directed toward lessening the conditions that favor the precipitation. An acidic diet with meat, bread and fat predominating, and vegetables and fruits suppressed, might help in acidification of the urine. The administration of calcium, in the form of carbonate, from 1 to 2 Gm. three times a day, has been recommended by von Noorden as lessening the elimination of phosphate in the urine by holding it in the bowel. Tobler believes that there is an excess of calcium in the system, because of endocrine disturbance, and that the disproportion in elimination of calcium to phosphate leads to production of the insoluble form. He advises a

calcium-poor diet consisting, in addition to the diet mentioned, of rice, potatoes and sugar, with avoidance of milk, eggs and leguminous products. Excepting that it might lead to formation of a phosphate stone, the condition is really of no consequence and hardly deserves much attention.

EPINEPHRINE WITH HYPOPHOSPHITES

To the Editor:—What is the proper value of the use of the solution of epinephrine hydrochloride when given by mouth and, if of any value, could it be combined for instance with a solution of hypophosphites as a reconstructive after any wasting diseases such as typhoid or influenza? Please omit name.

M.D., South Dakota.

ANSWER.—Epinephrine given by mouth has practically no effect, unless relatively large doses are given (from 0.002 to 0.005 Gm.) in gelatin capsules on an empty stomach. Then a transient rise of blood pressure may be produced; this effect is, however, not constant, and is liable to be accompanied by epigastric and substernal pain and nausea, especially in the presence of hyperthyroidism. It is probably without value as a "tonic" or "reconstructive." The lack of value of the hypophosphites as tonics and reconstructives has been demonstrated most thoroughly ("The Hypophosphite Fallacy," Report of the Council on Pharmacy and Chemistry, THE JOURNAL, Sept. 2, 1916, p. 760).

CALIBRATION OF MERCURY SPHYGMOMANOMETER

To the Editor:—1. Is it true that accuracy requires that each mercury sphygmomanometer be carefully hand calibrated? 2. Is it not a fact that the unit of pressure in blood pressure measurement is the hydrostatic pressure exerted by a column of mercury 1 mm. high, and that, therefore, the scale should be a true millimeter scale; that is, the distance between the 0 and the 300 millimeter graduations, for example, should actually measure 30 cm.? 3. Does accuracy demand that the lumen of the mercury tube be bored with the utmost precision to prevent any variation in its diameter? 4. Is it not a fact that even great variations in the diameter of the lumen of the mercury tube (so long as there is no constriction great enough to prevent the flow of mercury) will make no difference in the accuracy of reading? 5. In other words, how can there be any difference between the hydrostatic pressure exerted by a 200 mm. column of mercury in an irregular tube and that exerted by 200 mm. of mercury in a tube so bored that the lumen is entirely uniform throughout its length?

DEXTER H. WITTE, M.D., Milwaukee.

ANSWER.—1. Yes.

2. By a pressure of 1 mm. of mercury is meant the hydrostatic pressure exerted by a column of mercury 1 mm. high, and consequently a pressure of 100 mm. of mercury is the hydrostatic pressure exerted by a column of mercury 100 mm. high, etc. Then when a pressure of 100 mm. of mercury is applied to the manometer, the vertical distance between the levels of the mercury in the reservoir and in the tube measures 100 mm., but the distance from the zero graduation on the scale to the mercury level in the tube is less than 100 mm., since the scale is fixed and does not follow the changes in mercury level in the reservoir which accompany changes in the applied air pressure.

3. No, if the instrument is calibrated.

4. The magnitude of the variations in bore makes no difference in the accuracy if the instrument is calibrated. Of course, under certain conditions, such as a bore as small as 1 mm. and very dirty mercury, the column might stick and air pockets form.

5. There is no difference.

In the following explanation, a manometer with a reservoir of uniform, circular cross-section is assumed. This simplifies the discussion by requiring consideration only of variations in the glass tube, and does not invalidate the argument at all. The scale is assumed to be fixed permanently with its zero graduation at the zero level of the mercury in the tube and in the reservoir.

In figure 1 is shown diagramatically an ideal manometer having a tube of uniform circular cross-section. Such a tube cannot be obtained commercially, but instead, the commercial tubes vary in bore as indicated in an exaggerated manner in the manometer shown in figure 2.

The position of the scale graduations can be determined for the ideal manometer of figure 1 as follows: If initially no differential pressure is applied to this manometer, the level in the reservoir is the same as the level in the tube, which level is designated as the zero level of the manometer. Suppose that a differential pressure of 20 mm. of mercury be applied to this manometer. The mercury level in the reservoir will fall and the level in the tube will rise until the vertical distance between them measures 20 mm. The 20 mm. graduation of the scale is marked at the point to which the mercury has risen. Similarly all the other scale graduations can be determined.

However, for this ideal manometer, having both tube and reservoir of perfectly uniform bore, the height to which the mercury would rise in the tube for any given pressure could have been computed, provided the ratio of the cross-sectional areas of the reservoir and tube were known. Assume for the sake of argument that the cross-sectional area of the reservoir is nineteen times as great as the cross-sectional area of the tube. Since the volume of mercury which flows out of the reservoir as the level falls from the zero level to the level AA equals the volume which is required to fill the tube from the 0 graduation to the 20 mm. graduation, the rise in the tube and the fall in the reservoir must be in the inverse ratio of their cross-sectional areas. Hence the rise in the tube is $\frac{19}{19+1} \times 20 = 19$ mm. and the fall in the reservoir is $20 - 19 = 1$ mm. Also, since the scale remains fixed, the distance from the 0 to the 20 mm. graduation measures 19 mm. Similarly, the positions of any or all the graduations on the scale can be computed and they will be found to be equally spaced by an amount $\frac{19}{20}$ as great as the corresponding number of millimeters pressure.

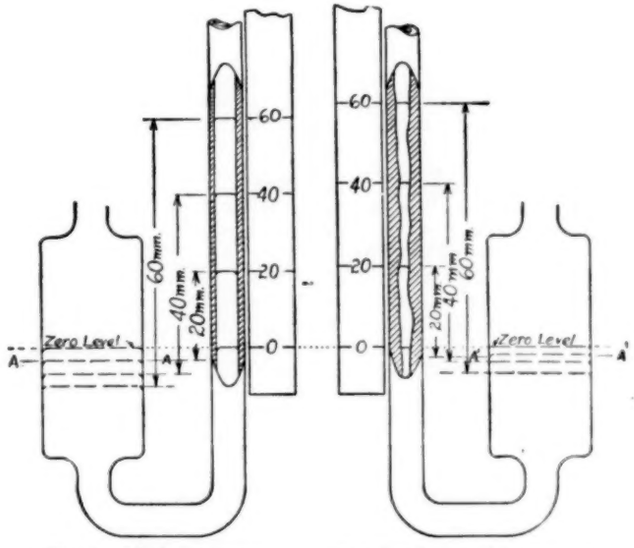


Fig. 1.—Ideal manometer.

Fig. 2.—Commercial manometer.

This shows that if the tubes and reservoirs of the manometers were perfect, it would not be necessary to calibrate the scales individually.

In the actual manometers, however, it is necessary to calibrate the scale individually owing to irregularities in the bore of the tube. Consider what will happen if the procedure just described is followed with the manometer shown in figure 2, in which the reservoir is circular and of the same diameter at all cross-sections, but in which the bore of the tube varies as shown in a somewhat exaggerated fashion. Initially, for zero differential pressure, the mercury stands at the same level in the tube and reservoir and the zero of the scale is also set to this level. Now apply a pressure of 20 mm. of mercury to the manometer, as before.

The mercury falls in the reservoir from the zero level to the level $A'A'$ and rises in the tube until the difference in the two levels is exactly 20 mm. The amounts which the mercury will fall in the reservoir and rise in the tube cannot be computed for this manometer, since we do not know how the bore of the tube varies. Consequently, the only way in which the 20 mm. graduation can be located accurately is by applying a known pressure of 20 mm. of mercury and marking the level to which the mercury rises. This procedure is called "calibrating the manometer."

In figure 2, the bore of the tube between the 0 and the 20 mm. graduations is less than the bore of the ideal tube shown in figure 1. Hence a smaller volume of mercury is required to fill the tube between these two graduations than was required for the ideal tube, and so the mercury level will fall less in the reservoir while the level is rising in the tube from the 0 to the 20 mm. graduation than it did for the ideal manometer. Consequently, the 20 mm. graduation will be higher on the scale than for the manometer shown in figure 1.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, July 12-15. Chairman, Dr. S. W. Welch, Montgomery.

CONNECTICUT: Hartford, July 12-13. Sec., Dr. Robert L. Rowley, 79 Elm Street, Hartford.

DISTRICT OF COLUMBIA: July 12. Sec., Dr. Edgar P. Copeland, Suite 110, 1801 Eye Street, Washington.

HAWAII: Honolulu, July 11-14. Sec., Dr. James A. Morgan, Young Bldg., Honolulu.

MASSACHUSETTS: Boston, July 12-14. Sec., Dr. Frank M. Vaughan, 144 State House, Boston.

MISSOURI: St. Louis, July 13-15. Sec., Dr. James Stewart, Jefferson City.

SOUTH DAKOTA: Huron, July 19. Dir. Medical Licensure, Dr. H. R. Kenaston, Bonesteel.

WASHINGTON: Seattle, July 11. Basic Science Examination, Seattle, July 7-8. Ass't. Director, Mr. George L. Berger, Olympia.

WEST VIRGINIA: Martinsburg, July 26. Commissioner, Dr. W. T. Henshaw, Charleston.

Kansas February Examination

Dr. A. S. Ross, secretary of the Board of Medical Registration and Examination, reports the written examination held at Topeka, Feb. 8, 1927. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Three candidates were examined, all of whom passed. Seven candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Rush Medical College		(1926)	92
University of Kansas School of Medicine		(1926)	90.1
St. Louis University School of Medicine		(1926)	88.4

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine		(1926)	Colorado
Bennett Medical College		(1910)	Oklahoma
Rush Medical College		(1926)	Illinois
Drake University College of Medicine		(1910)	Iowa
University of Michigan Medical School		(1923)	Michigan
Creighton University College of Medicine		(1924)	Nebraska
University of Oklahoma School of Medicine		(1925)	Oklahoma

Pennsylvania January Examination

Mr. C. D. Koch, director, Professional Education Bureau of the Pennsylvania Board of Medical Education and Licensure, reports the written and practical examination held at Philadelphia, Jan. 25-27, 1927. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Of the 67 candidates examined, 63 passed and 4 failed. Seven candidates were licensed by reciprocity and 4 by endorsement of their credentials. The following colleges were represented:

College	PASSED	Year Grad.	Number Passed
Howard University School of Medicine		(1925)	2
Loyola University School of Medicine		(1926)	1
Rush Medical College		(1926)	1
Tulane University of Louisiana School of Med.		(1923), (1925)	2
College of Physicians and Surgeons, Baltimore		(1908)	1
University of Maryland School of Medicine		(1925)	2
Harvard University		(1924), (1925)	2
Kansas City Medical College		(1905)	1
Washington University School of Medicine		(1925)	1
University of Buffalo School of Medicine		(1909), (1916)	2
North Carolina Medical College		(1913)	1
Hahnemann Med. College and Hosp. of Philadelphia		(1920)	1
Jefferson Medical College of Philadelphia		(1913), (1916), (1924), (1925, 2)	5
Medico-Chirurgical College of Philadelphia		(1914)	1
Temple University School of Medicine		(1920), (1925, 5)	6
University of Pennsylvania Sch. of Med.		(1924, 9), (1925, 8)	17
University of Pittsburgh School of Medicine		(1925)	1
Womans Medical College of Pennsylvania		(1925)	3
Meharry Medical College		(1925)	1
University of Texas School of Medicine		(1924)	1
Medical College of Virginia		(1924)	1
University College of Medicine, Richmond		(1912)	1
McGill University Faculty of Medicine		(1924)	3
Univ. of Toronto Faculty of Med.		(1894), (1923, 2), (1924)	4
University of Koenigsberg, Germany		(1924)*	1
National University of Ireland, Cork		(1923)	1

College	FAILED	Year Grad.	Number Failed
Chicago College of Medicine and Surgery		(1912)	1
Chicago Hospital College of Medicine		(1917)	1
Leonard Medical School, Raleigh		(1897), (1906)	2

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Yale University School of Medicine		(1924)	Maryland
Northwestern University Medical School		(1925)	Illinois
Tufts College Medical School		(1922)	Mass.
University of Michigan Homeopathic Medical School		(1918)	California
University of Pennsylvania School of Medicine		(1925)	New York
Temple University School of Medicine		(1922)	Delaware
University of Virginia Department of Medicine		(1920)	Virginia

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Harvard University		(1924)	N. B. M. Ex.
Jefferson Medical College of Philadelphia		(1925)	N. B. M. Ex.
University of Pennsylvania School of Medicine		(1915)	U. S. Navy
University of Virginia Department of Medicine		(1923)	N. B. M. Ex.

* Verification of graduation in process.

Book Notices

CHILD GUIDANCE. By Smiley Blanton, B.S., M.D., Director Child Guidance Clinic, Minneapolis, Minnesota, and Margaret Gray Blanton. Cloth. Price, $2.25. Pp. 301. New York: Century Company, 1927.

The Child Guidance Clinic of Minneapolis has achieved national note through the work of Dr. Smiley Blanton and Mrs. Blanton. Their common sense methods and conservative selection of a point of view, not entirely that of the behaviorist or the psychanalyst, and their successful results in the cases of numerous "problem children" sent to them for study, have made them recognized as authorities in the field concerned. In the present volume the various chapters discuss every phase of the training of the child, including his physical reactions to life, his mental reactions, and the attitude of the parents. Of especial value are the sections on discipline, on education concerning matters of sex, and on personal study of the child, all of which are discussed in a most interesting and delightful manner. Above all, the book emphasizes the importance of thinking with the point of view of the child, rather than with that of the parent. Unfortunately, most of the toys, most of the nursery equipment, and almost everything that is developed for the child is developed from the point of view of "sales-appeal" to the parent. Frequently the interests of the child are completely at variance with this point of view.

HEALTH SUPERVISION AND MEDICAL INSPECTION OF SCHOOLS. By Thomas D. Wood, A.M., M.D., College Physician, Teachers College, Columbia University, and Hugh Grant Rowell, A.B., M.D., Physician to the Horace Mann Schools. Cloth. Price, $7.50 net. Pp. 637, with illustrations. Philadelphia: W. B. Saunders Company, 1927.

Within recent years there has been an increasing interest in the problem of school health supervision. Because of the intimate contacts of children in the schools, an easy path is opened for the spread of communicable diseases. In addition, in the school the opportunity is presented for the discovery and correction of the great mass of major and minor physical defects which handicap the pupil in mental and physical growth and in development. Modern school health work has availed itself of the progress that has been made in the fields of medicine and of education, so that much has been added to the traditional program of medical inspection. Examinations are more thorough, in many instances including, in addition to the routine physical inspection, urine and blood examinations, metabolic tests, and anthropometric measurements as well as the exact measurement of deficiencies in sight and hearing. In their book, the authors have presented the best methods used in the schools throughout the country in carrying on a program of health supervision. They give a thoroughly practical and comprehensive system. The procedures recommended are those which are best adapted to bring to the pupil the maximum of health, physical well being and healthful surroundings. The examinations necessary to determine the health and physical status of the child are discussed, and the duties of the physican, nurse and teacher in carrying them out are stressed. The provisions needed for the handling of the defective child are also dealt with in a most thorough manner. Frequently, the most difficult problem which the school authorities are called on to deal with is the means whereby the correction of ill health and physical defects can be brought about. The authors

discuss the methods of handling this situation. In some instances, because of the scope of certain of the fields, there has necessarily been limitation of the material to the mere pointing out of the essentials, as in the chapters on mental and social hygiene and on mental tests. On the other hand, the authors have done much to show the many sides to the problem of health supervision in the school, and have discussed almost every phase of it to some extent. At times they have been at fault in bringing forward their material without drawing any definite conclusions from it. The book will be found most valuable to all those who are concerned with the health of the child in the school—to school physicians, nurses, administrative officers, teachers and mothers. It might serve as a useful textbook for those engaged in the teaching of school hygiene and sanitation.

HANDBUCH DER NORMALEN UND PATHOLOGISCHEN PHYSIOLOGIE: Mit Berücksichtigung der experimentellen Pharmakologie. Herausgegeben von A. Bethe, G. v. Bergmann, G. Embden, und A. Ellinger. Band XVII. Correlationen 3. (J/XVI-XXI. Wärme- und Wasserhaushalt. Umweltfaktoren. Schlaf. Altern und Sterben. Konstitution und Vererbung). Paper. Price, 84 marks. Pp. 1204, with 179 illustrations. Berlin: Julius Springer, 1926.

This is the last volume of the Normal and Pathologic Physiology that was sent for review. It is also the last volume of the series. But the series has not been published entirely. In fact, only six volumes have appeared and been reviewed in THE JOURNAL. Various physiologic odds and ends are discussed by twenty-eight contributors. This volume embraces articles on pathology and pharmacology of fevers and hypothermic states; hibernation; diabetes insipidus; water metabolism; the pathology and pharmacology of edema and inflammation; the physiologic action of light, including effects of the roentgen rays and of radium; influence of baths under normal and pathologic conditions; the physical factors and influence of climate; sleep and allied states (hypnosis and hypnotics); senescence; death, and the significance of constitution in the field of psychiatry. As indicated in reviews of some of the other volumes, the collaborative efforts of some of the German scientists in this field command not only our admiration but also our gratitude. A compilation and critical evaluation of the existing physiologic literature was sorely needed since the appearance of Nagel's Handbook, which is now antiquated. This set of books must be on the shelves of every institution that lays emphasis on graduate work in the biologic sciences. As a source of information of bibliographic references, this set of books (when all have been published) will be indispensable, although the cost of the volumes seems unusually high. As one reads through the volume with its many technical expositions and attempts at elucidating the nature of living processes in its diverse expressions, one is struck by the immense amount of effort designed to solve the problems. Von Haller certainly had an easy job when compiling his Elementa (1755) compared with the herculean task he might have imposed on himself in this age. Obviously the volumes bear a strong German impression. The absence of references to foreign (particularly American) investigators is no doubt due to the unavailability of the literature since the war because of the general poverty of the universities and their scientists.

SURGICAL ANATOMY OF THE HUMAN BODY. Volume II, Upper Extremities, Neck, Shoulders, Back, Lower Extremities. By John B. Deaver, M.D., Sc.D., LL.D., Surgeon-in-Chief to the Lankenau Hospital, Philadelphia. Second edition. Cloth. Price, $12 per volume; $36 for the three volumes. Pp. 854, with illustrations. Philadelphia: P. Blakiston's Son & Company, 1926.

Anatomy is a vast subject, and unless one is constantly teaching it one is not likely to have detailed knowledge. The average student leaves medical school with only a confused jumble of terms to show for his two years of study. It is really the dead language course of the medical curriculum, and bears the same relation to surgical anatomy that postmortem pathology bears to living or surgical pathology. The one presents the "chassis" unassembled, its component parts represented by muscles, nerves, vessels and viscera, and a word memory to fix them. The surgeon learns his anatomy through the repeated visualization of structures and their relationships, and he continues to be conversant with anatomic detail long after he has forgotten the nomenclature. Surgical anatomy is the study of surface landmarks, the identification of living structures in situ, through an incision rather than when they are displaced by dissection, and it correlates anatomy with pathology. Deaver presents his material from the latter point of view, and in almost every description of importance he groups his facts about and shows their relationship to the surgery of the particular region under consideration. The text is a fine piece of work; the illustrations, while not colored, are many and excellent. The volume is limited to the extremities, neck, shoulder and back, which is a convenient arrangement for regional study.

HEALTH RECORD FOR CHILDREN. By J. Theron Hunter, M.D. Cloth. Price, $1. Pp. 52. Baltimore: Williams & Wilkins Company, 1927.

An excellent, straightforward book, to be recommended to any mother who will write a few notes on her child's family and developmental history by jotting down illnesses as they come along. Each page covers a subject indicating to the mother the most important features to be recorded. There are charts for weight, dates and duration of colds and sore throats; and particularly suitable is the chart for temperature and a few other essentials which the parent should record in any acute infection. In a second edition certain details might well be rearranged; for example, the page for dates of walking, talking and illnesses would come more naturally immediately before the temperature charts instead of before birth.

TRAITÉ DE PHYSIOLOGIE NORMALE ET PATHOLOGIQUE. Publié sous la direction G.-H. Roger, professeur de physiologie à la Faculté de médecine de Paris, et Léon Binet, professeur agrégé de physiologie à la Faculté de médecine de Paris. Tome VII. Sang et lymphe: Réactions d'immunité. Par. M. M. Ch. Achard, A. Besredka, et autres. Cloth. Price, 65 francs. Pp. 502, with illustrations. Paris: Masson & Cie, 1927.

This volume on normal and pathologic physiology deals with blood, lymph and immunity. It is a composite effort of eleven authors with chapters on the morphology of the blood, hemoglobin and its derivatives, respiratory albuminoids of invertebrates, blood plates, bone marrow, blood coagulation, hemorrhage, blood transfusion, the lacunar system (including edema and dehydration), lymph and lymph production, lymph glands, immunity (this chapter by Bordet), and anaphylaxis. Each chapter has limited literature references. The book as a whole is weakened by the absence of an index at the end so that the contents must be hunted up by the scant aid of the table of chapters. The chapter by Bordet on immunity is particularly good. It seems significant, however, that in such an ambitious monograph on the blood and lymph, with chapters on hemorrhage, edema and transfusion, there should be no chapter on the various anemias. One is also struck by the fact that in the chapter on the physiology and pathology of the blood plates no reference appears to be made to the recent work of Howell on the significance of the blood plates in hemophilia. The book as a whole, however, is readable, lucid, reasonably comprehensive and down to date.

INDEX AND HANDBOOK OF X-RAY THERAPY. By Dr. Robert Lenk, Privat-Dozent of Medical Roentgenology, University of Vienna. With a foreword by Professor Holzknecht. Translated by T. I. Candy, M.B., B.Ch., D.M.R.E., Hon. Radiologist, Royal Gwent Hospital, Newport, Mon. Cloth. Price, $2.25. Pp. 121. New York: Oxford University Press, 1926.

This is an English translation of an excellent handbook meant primarily to instruct the general practitioner by outlining the indications for roentgen-ray therapy, and secondarily for the roentgenologist by providing him with a definite and proved scheme for the treatment of diseases by roentgen rays. The book is arranged in two sections. In the first section the mode of action of roentgen rays, effects of treatment, including the various reactions, prognosis and adjuvant treatment, are considered in a clear, concise and practical manner. The second section concerns itself with the use of roentgen rays as the therapeutic agent of choice in some sixty selected diseases. These are arranged alphabetically and a brief statement concerning the mode of action, reactions, course, duration and result of treatment is made for each. The formulas are all in terms of the Holzknecht unit, which detracts from the value of the book to

the specialist in this country, where other standards of dosage are more commonly used. However, the author anticipates this in his general discussion of treatment formulas and agrees that roentgen-ray therapy is not purely a technical problem but is subject to variation for each individual case. The book contains a wealth of material of great interest to the general practitioner who wishes to have some idea of the possibilities of roentgen-ray therapy, and enables him to advise his patient intelligently to seek this form of therapy and to discuss in a general way the many questions which are always asked of him. The author's experience with roentgen-ray therapy has been extensive, and there is probably more than the element of optimism when he suggests the use of roentgen rays in such conditions as gallstone colic, gastric ulcer, badly functioning gastro-enterostomy, and otosclerosis. Although the index does not include the contents of the second section, the diseases discussed are alphabetically arranged and are easily referred to. The superfluous and needless description of apparatus and a discussion of elementary physics usually found are omitted. For the practitioner the book fills a long felt want and contains an unusual amount of data to which he can quickly and profitably refer.

A TEXTBOOK OF EXODONTIA: Exodontia, Oral Surgery and Anesthesia. By Leo Winter, D.D.S., Professor of Oral Surgery, New York University College of Dentistry. Cloth. Price, $7.50. Pp. 364, with 329 illustrations. St. Louis: C. V. Mosby Company, 1927.

This is a valuable book for the student or the practitioner working in the field of exodontia and minor oral surgery. The author treats the several divisions of the work with great care and thoroughness. Practical ideas mark the chapters dealing with pathology and diagnosis; anesthesia, both local and general; extraction of teeth that are in normal and abnormal position; technic; treatment of complications; removal of impacted teeth; treatment of fractures and dislocations, and accidents. They can be followed and carried out not only by the specialist but also by any one possessed of average professional skill and ability. The many photographic and roentgenographic illustrations further enhance the value of this work.

ERGEBNISSE DER GESAMTEN MEDIZIN. Herausgegeben von Prof. Dr. Th. Brugssach, Oberarzt der II. medicinischen Klinik der Charité in Berlin. IX.—Angina pectoris. Von Prof. Dr. Hans Kohn. Paper. Pp. 209-276. Berlin: Urban & Schwarzenberg, 1926.

The author has condensed into these sixty-five papers a comprehensive summary of the present status of our knowledge of angina pectoris. The historical background is given briefly but in full. From this are traced the various views of the symptom complex or, as the author would consider it, of the disease entity. The views of the different authors are considered entirely and fairly, in spite of the somewhat partisan bias of the author. The evidence in support of the hypothesis which he believes to be the only logical explanation for the symptoms is carefully developed and conclusively presented. He considers that angina pectoris is a definite disease entity and not a symptom complex, and that it is always due to a narrowing of the coronary vessels, causing an ischemia of the heart muscles. This may be due to anatomic changes in the vessels, such as atheromatous syphilis or endo-arteritis, with a possible thrombosis superimposed on either of them, or, rarely, to an embolus. In the absence of sufficient anatomic changes, he holds that the same phenomena characteristic of angina pectoris can be produced by an active vasoconstriction of the coronaries, and that even in the presence of anatomic changes the attack itself may be precipitated by a vasoconstriction. The sudden death is due to an ischemia of the heart muscle and ventricular fibrillation. The evidence gathered is convincing. Similar views have been held, in part at least, by others, as von Neusser, but have never been so clearly presented or supported by so thorough and logical a brief. This admirable exposition should be read generally by physicians, and not only by those especially interested. It is impossible to convey in a brief review the amount of valuable material in these few pages. There is a full index to the literature used. It is unfortunate that the construction is at times unnecessarily involved.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

PRINCIPLES OF CHEMISTRY. An Introductory Textbook of Inorganic, Organic and Physiological Chemistry for Nurses and Students of Home Economics and Applied Chemistry, with Laboratory Experiments. By Joseph H. Roe, Ph.D., Professor of Chemistry, George Washington University Medical School. Cloth. Price, $2.50. Pp. 378, with 30 illustrations. St. Louis: C. V. Mosby Company, 1927.

Another textbook for nurses telling more than they ever will need to know.

UNIVERSAL KNOWLEDGE. A Dictionary and Encyclopedia of Arts and Sciences, History and Biography, Law, Literature, Religions, Nations, Races, Customs and Institutions. Edited by Edward A. Pace, Ph.D., D.D., and others. Volume I. Cloth. Price, $6.25 per volume; $75 per set of twelve volumes. Pp. 1694, with illustrations. New York: Universal Knowledge Foundation, Inc., 1927.

New encyclopedia with many distinguished medical contributors.

TASCHENBUCH DER PRAKTISCHEN UNTERSUCHUNGSMETHODEN DER KÖRPERFLÜSSIGKEITEN BEI NERVEN- UND GEISTESKRANKHEITEN. Von Professor Dr. V. Kafka, Leiter der serologischen Abteilung der psychiatrischen Universitätsklinik u. Staatskrankenanstalt Friedrichsberg, in Hamburg. Third edition. Paper. Price, 6.60 marks. Pp. 114, with 42 illustrations. Berlin: Julius Springer, 1927.

Vest pocket guide for neurologic examinations.

THE MIND AND ITS MECHANISM: With Special Reference to Ideo-Motor Action, Hypnosis, Habit and Instinct, and the Lamarckian Theory of Evolution. By Paul Bousfield, M.R.C.S., L.R.C.P., and W. R. Bousfield, K.C., F.R.S. Cloth. Price, $4. Pp. 224. New York: E. P. Dutton & Company, 1927.

Highly complex consideration of theories of mind action, concluding that mind patterns are heritable.

RÖNTGENTHERAPEUTISCHES HILFSBUCH FÜR DIE SPEZIALISTEN DER ÜBRIGEN FÄCHER UND DIE PRAKTISCHEN AERZTE. Von Dozent Dr. Robert Lenk, Assistent am Zentralröntgenlaboratorium des allgemeinen Krankenhauses in Wien. Mit einem Vorwort von Professor Dr. Guido Holzknecht. Third edition. Paper. Price, 4.80 marks. Pp. 81. Vienna: Julius Springer, 1927.

Handbook of roentgen-ray technic.

A PRACTICAL TREATISE ON DISEASES OF THE SKIN FOR THE USE OF STUDENTS AND PRACTITIONERS. By Oliver S. Ormsby, M.D., Clinical Professor and Chairman of the Department of Dermatology, Rush Medical College of the University of Chicago. Third edition. Cloth. Price, $11. Pp. 1262, with 524 illustrations. Philadelphia: Lea & Febiger, 1927.

New edition thoroughly revised based on extensive experience in teaching and practice.

RÖNTGEN RAYS IN DERMATOLOGY. A Handbook for Practitioners and Students. By L. Arzt, M.D., and H. Fuhs, M.D., Professors at the Riehl Clinic for Dermatology and Syphilology, Vienna. Translated by C. Kevin O'Malley, M.C., M.B., B.A.O. Cloth. Price, $6. Pp. 202, with 57 illustrations. New York: William Wood & Company, 1927.

Translation of monograph giving current practice of Viennese school.

BABY'S DAILY EXERCISES. A Manual of Exercises for Infants from Five Months to One Year of Age. By Edward Theodore Wilkes, B.S., M.D., Assistant Pediatrician, Out-Patient Department, New York. Cloth. Price, $1. Pp. 77, with illustrations. New York: D. Appleton & Company, 1927.

The baby's daily dozen thoroughly elucidated.

SHOULD WE BE VACCINATED? A Survey of the Controversy in Its Historical and Scientific Aspects. By Bernhard J. Stern, Instructor of Sociology, Columbia University. Cloth. Price, $1.50. Pp. 146. New York: Harper & Brothers, 1927.

An enlightened layman proves that sanitation plus vaccination are necessary to control smallpox.

VENEREAL DISEASE: Its Prevention, Symptoms and Treatment. By Hugh Wansey Bayly, M.C., Hon. Sec. Society for the Prevention of Venereal Disease. Third edition. Cloth. Price, 10/6 net. Pp. 242, with 77 illustrations. London: Faber & Gwyer, Ltd., 1927.

New edition with special reference to recent investigations.

YEAR BOOK OF THE PENNSYLVANIA TUBERCULOSIS SOCIETY FOR 1926. Paper. Pp. 20. Philadelphia: Pennsylvania Tuberculosis Society, 1927.

LA CESÁREA EXTRAPERITONEAL Y LA TRANSPERITONEAL SUPRASINFISARIA SUS MODALIDADES TÉCNICAS Y SUS FINALIDADES TERAPÉUTICAS. Por Mateo Carreras. Paper. Pp. 106, with illustrations. Madrid: Javier Morata, 1927.

Spanish monograph on cesarean operation.

LA TUBERCULOSE. Par le Dr. Edouard Rist, médecin de l'Hôpital Laennec. Boards. Price, 19 francs. Pp. 356, with 31 illustrations. Paris: Armand Colin, 1927.

French monograph dedicated to Laënnec and published in recognition of the centenary.

THE DEVELOPMENT OF MEDICAL EDUCATION IN THE PACIFIC NORTHWEST. By O. Larsell, University of Oregon Medical School. Paper. Pp. 48. Portland: University of Oregon Medical School, 1927.

Medicohistorical monograph of interest in American medical progress.

EMINENT CHEMISTS OF OUR TIME. By Benjamin Harrow. Second edition. Cloth. Price, $3. Pp. 471, with illustrations. New York: D. Van Nostrand Company, Inc., 1927.

Biographic exposition of rise of modern chemistry.

THE EVOLUTION OF TUBERCLE. By Allen K. Krause. Cloth. Price, $1. Pp. 95. New York: Journal of the Outdoor Life, 1927.

Reprint of a lecture defining present status of knowledge and trend for research on tuberculosis.

FIFTY YEARS OF MEDICINE. By G. E. Crawford, M.D. Paper. Pp. 35. Cedar Rapids: Cedar Rapids Life Insurance Company, 1927.

Reminiscences of a practitioner appealing for more general practitioners.

DIE CHIRURGIE: Eine zusammenfassende Darstellung der allgemeinen und der speziellen Chirurgie. Herausgegeben von Prof. Dr. M. Kirschner und Prof. Dr. O. Nordmann. Lieferung 15. VI. Band, 2 Teil. Die Chirurgie der Milz. Die Chirurgie der sog. Blutkrankheiten. Von Dr. A. Weinert. Paper. Price, 13 marks. Pp. 1039-1277, with 88 illustrations. Berlin: Urban & Schwarzenberg, 1927.

POSTENCEPHALITIC RESPIRATORY DISORDERS. Review of Syndromy, Case Reports, Physiopathology, Psychopathology and Therapy. By Smith Ely Jelliffe, M.D., Ph.D. Nervous and Mental Disease Monograph Series No. 45. Cloth. Price, $2.50. Pp. 135, with illustrations. Washington, D. C.: Nervous and Mental Disease Publishing Company, 1927.

PSYCHIATRIE. Von Prof. Dr. Emil Kraepelin und Prof. Dr. Johannes Lange. Band II. Teil 1. Klinische Psychiatrie. Von Dr. Emil Kraepelin, ord. Professor a. d. deutschen Forschungsanstalt für Psychiatrie in München. Ninth edition. Paper. Price, 69 marks. Pp. 1471, with 326 illustrations. Leipsic: Johann Ambrosius Barth, 1927.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Von W. Kolle, R. Kraus, und P. Uhlenhuth. Lieferung 4. Band VI. Rotz. Von Prof. Dr. E. Lührs.—Bacillus pyocyaneus. Von Prof. Dr. A. Lode. Third edition. Paper. Price, 13 marks. Pp. 183, with illustrations. Jena: Gustav Fischer, 1927.

PLÖTZLICHE UND AKUTE ERKRANKUNGEN DES NERVENSYSTEMS: Ihr Erkennen und ihre Behandlung. Vorlesungen, gehalten vor reiferen Studierenden und Aerzten. Von Prof. Dr. S. Fleischmann. Paper. Price, 12 marks. Pp. 301, with 56 illustrations. Berlin: S. Karger, 1927.

SPIROCHAETOSE BRONCHO-PULMONAR HEMORRHAGICA DE CASTELLANI. These de doutoramento cadeira de clinica medica. Por Dr. Hamleto Capriglione, natural de Campinas (Esatado de S. Paulo). Paper. Pp. 192, with illustrations. Rio de Janero, 1926.

PROCEEDINGS OF THE TWENTY-THIRD ANNUAL CONVENTION OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY. Also proceedings of joint meeting with the American Conference of Pharmaceutical Faculties. Paper. Pp. 193. Philadelphia, 1927.

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION. Volume 44, 1926. Edited by John H. Jopson, M.D., Recorder of the Association. Cloth. Pp. 632, with illustrations. Philadelphia: William J. Dornan, 1926.

FOURTEEN IS TOO EARLY: Some Psychological Aspects of School-Leaving and Child Labor. By Raymond G. Fuller, Research Specialist. Paper. Pp. 40. New York: National Child Labor Committee, 1927.

LA VECCHIAIA PUÒ ESSERE RITARDATA? Por Nicola Pende, direttore della clinica medica della R. Università di Genova. Paper. Pp. 20, with 4 illustrations. Rome: Romana Medica, 1927.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA. Seventy-Third Annual Session, June, 1926. Cloth. Pp. 588, with illustrations. Southern Pines, 1927.

TWELFTH ANNUAL REPORT OF THE SANATORIUM OF THE METROPOLITAN LIFE INSURANCE COMPANY, MOUNT MCGREGOR, N. Y. Paper. Pp. 24. New York, 1927.

Miscellany

A NEW STAIN FOR BLOOD FILMS

Nyfeldt *(Ugeskrift for Læger)* has worked out a new method which gives a very clear distinction between the eosinophil and the pseudo-eosinophil leukocytes, so that a mistake is out of the question. This method is practiced as follows:

1. The specimen is fixed in absolute methyl alcohol for five minutes, the alcohol being pressed out with several layers of blotting paper.

2. It is stained for five minutes with a solution of 1 part of May-Greenewald's stain and 2 parts of Epstein's lithion-toluidin blue, after which is is,

3. Washed well in water and then,

4. Differentiated for five seconds in a watery saturated trinitrophenol solution and then,

5. Washed well in water and dried with blotting paper.

The color effect obtained by this method is the following:

The chromocytes are stained a beautiful light green, while the polychromatic chromocytes are light green to bluish green.

The eosinophil granulations are shining green, while the pseudo-eosinophil granulations and the neutrophils are dark bluish purple.

Basophil granules are bluish black, while the azurophil granules are carnelian red. The nuclei are well stained in these different cells, but seem to be mode easily stained than are the Pappenheim stained specimens.

The plasma of the lymphocytes is either dark blue in the small ones or light blue in the big ones. The plasma of the monocytes is often filled with a dust-shaped light purple granulation.

The malaria plasmodium seems to be blue in the light green chromocyte body, while the chromatin grain is black-red, so that there is a good contrast.

GASTRIC HYPERTONUS AND GASTROPTOSIS

Arthur F. Hurst (*Guy's Hosp. Rep.* **77**:22 [Jan.] 1927) concludes that the types of stomach commonly diagnosed by radiologists as hypertonic and as dropped, respectively, are quite incorrectly named. Experiments with stomach tubes connected with a manometer and more recent radiologic investigations have shown that the tone of the normal stomach adapts itself to the volume of its contents, so that the pressure within remains constant. Every radiologist is familiar with the fact that the upper level of the contents may be just under the diaphragm, whether it lies almost horizontally with the lowest point of its greater curvature two inches above the interiliac line, or vertically with the greater curvature dipping into the true pelvis. This shows that the intragastric pressure and therefore the tone are the same in the two stomachs. Yet the first stomach is commonly called hypertonic; the second is not indeed called hypotonic, a term rightly reserved for cases in which the upper level of the contents is abnormally low, but it is said to have "dropped." It is clear that the contrast between the two stomachs is erroneously described—a term indicating an abnormality of tone being contrasted with one indicating an abnormality in position. The former is obviously wrong, because the tone is the same in the two stomachs. The latter is equally incorrect, for "gastroptosis," or dropping of the stomach, should indicate that the stomach has fallen. It is true that in so-called gastroptosis the stomach falls on standing from the position it occupies when lying; but every stomach does this, and there is no evidence that it has fallen from a higher position than it once occupied in the erect position.

So-called gastroptosis is quite common in people with excellent abdominal muscles, who have always been thin, and it also occurs, though less frequently, in comparatively stout individuals. On the other hand, the so-called hypertonic stomach may exist in people who have lost much weight and whose abdominal muscles have become very weak. Nothing, in fact, will make such a stomach drop materially, just as nothing will

make the so-called dropped stomach rise to the level of the average stomach. Therefore, the usual explanations given for the remarkable difference between the appearances of the so-called hypertonic and the so-called dropped stomach are incorrect. The only satisfactory explanation is to regard the difference between the two types of stomach as due to anatomic variations from the average normal length.

The stomach swings between the part of the esophagus that passes through and is fixed to the diaphragm about one inch above the cardia, and the junction between the duodenal bulb and the descending retroperitoneal portion of the duodenum. If it is short, it assumes the diagonal or almost horizontal position of the so-called hypertonic stomach; if it is long, it assumes the vertical position with the steeply ascending pyloric part of the so-called dropped stomach. These two types of stomach should be renamed, respectively, the short stomach and the long stomach, and they should be regarded as nothing more than normal anatomic variations from the stomach of average length. The short stomach is often associated with hyperchlorhydria and predisposes to duodenal ulcer, with which it is therefore frequently associated. When other forms of stomach are found with duodenal ulcer, some reflex or organic interference with the pyloric sphincter is generally present; the typical short form is restored when the ulcer heals. The long stomach is generally associated with a normal or low gastric acidity, and it appears to predispose to gastric ulcer. The conception of a "hypertonic stomach" is the invention of the radiologist to explain an appearance which is due to something else. A "hypotonic stomach," corresponding with the "atonic dilatation of the stomach" of the preradiologic period, does exist, but in most cases in quite a different form from what is commonly described. In the absence of organic disease it is rare and never of any clinical significance, being found incidentally in routine radiologic examinations: the upper level of the gastric contents is lower than usual without any corresponding excess of gas being present in the fundus. As tone is completely independent of peristalsis, this does not result in any delay in evacuation, and does not give rise to symptoms.

Severe hypotonus rarely, if ever, occurs except as a complication of pyloric obstruction, when it develops in exactly the same way as the myocardial hypotonus which may accompany the dilatation of the left auricle in mitral stenosis. The gradual development of pyloric obstruction leads to hypertrophy of the muscular wall of the stomach, which to some extent compensates for the difficulty in evacuation. A time soon comes, however, when the stomach is never completely empty, and, if food continues to be taken in the usual amount, it gradually becomes more and more dilated. In the early stages the stomach is still capable of contracting to its normal size if it is completely evacuated by a tube or by vomiting, no loss of tone having occurred. But gradually the postural tone of the musculature adapts itself to the new conditions, so that evacuation is no longer followed by a complete return to the normal tone of the empty stomach; some true hypotonus has now developed. Only in neglected cases, which are rare nowadays, does anything approaching complete atony occur; in such cases it is essential to give a course of gastric lavage and to keep the stomach empty during most of each day for a week or more before operation, as, unless tone is restored, the gastro-enterostomy will not work satisfactorily and death is likely to follow. Unless great care is taken, atony is likely to be diagnosed in many cases in which it does not occur. In pyloric obstruction a considerable accumulation of clear gastric juice may be present when fasting in the morning, together with more or less food if the obstruction is organic. The opaque meal falls through it, and its upper surface may be mistaken for the upper surface of the gastric contents, but more careful inspection will show that the latter is some inches higher up or possibly even in the normal position, though it is difficult to recognize, as the accumulation of gastric juice is only slightly more opaque than the gas bubble immediately above it. In such cases the roentgen-ray examination should be repeated after the stomach has been evacuated with a tube, in order to estimate the tone of the stomach and to obtain a clear view of the pyloric vestibule, which would otherwise be filled with the translucent resting contents of the stomach instead of the opaque meal. Hurst protests against the term "orthotonic" stomach. It is quite meaningless. The so-called orthotonic stomach is simply the stomach of average length; it may occasionally be actually hypotonic, and, if such a condition as true hypertonus ever occurs, there is no reason why it should not become hypertonic.

Medicolegal

Questions Not Permitted to Be Asked Medical Expert

(Commonwealth v. Marshall (Pa.), 135 Atl. R. 301)

The Supreme Court of Pennsylvania does not find reversible error in the exclusion of certain questions propounded to a physician who was called as a witness by the defendant in this homicide case. One of the questions was properly excluded because it concerned a subject sufficiently within common knowledge to render an expert opinion unnecessary. Others of the questions sought to have the witness testify that two separate necropsy reports, made by physicians who appeared at the call of the commonwealth, did not contain sufficient evidence to warrant the conclusion that death resulted from the cause therein assigned. These documents were obviously form reports and did not attempt to give more than the briefest outline of the major conditions found on examination of the body. That an attack on the conclusions of the examining physicians, as to the cause of death, could not properly be made by a critical view of these form reports was clear, and offers of testimony to accomplish that end were rightly refused.

In other instances the defendant sought to have his medical expert base his opinion, not on his own statement of existing facts, nor on facts embodied in a hypothetic question, but on the testimony given by the physicians who had made the necropsies. While it is permissible for an expert to express an opinion based on the nonconflicting testimony of others, when such testimony is assumed to be true, this should be allowed only when the prior testimony embodies a set of facts of such completeness as to be susceptible of being put in the form of a valid hypothetic question. The testimony of the commonwealth's physicians contained much of fact and much of opinion; it did not necessarily mention all the conditions existing in the body of the deceased when it was examined, and, in fact, the coroner's chief physician testified that all that had been observed in making the necropsy had not been brought out in the testimony, though there was no assignment of error complaining of an insufficient statement of facts to permit the expression of opinion by the commonwealth's witnesses, who said that they deduced their ultimate opinion from all they had observed in making their necropsies. Then some of the questions put to the defendant's medical expert would have required him to draw his own conclusions of fact, from the prior testimony, on which to base his opinion. This the law would not permit. Opinion testimony may be given only on a set of definitely established or assumed facts; all balancing of testimony and deductions of fact therefrom must be made by the jury.

Instead of having the medical expert by expressing his own professional views on an assumed state of facts help the defendant's case, thus rebutting the expert testimony of the prosecution, the effort was apparently to have him condemn the medical witnesses of the commonwealth by expressing his opinion that, on the data considered by them, it could not properly be said that the death of the deceased was attributable, as they had said, to "compression of the neck." Practically all the questions for this purpose were leading, in the sense that they suggested the answer desired, and were objectionable on that score if for no other reason. Furthermore, the defendant's expert described in detail the various physical conditions and signs which usually appeared, and were to be scientifically expected, in cases of strangulation. The jury had this testimony to compare with that of the physicians called by the commonwealth, and, with the assistance of counsel, could determine whether or not the signs and conditions described by the defendant's expert appeared

in the case. It was for them, the triers of the facts, to decide that question, not for him to do so by answering a comprehensive and suggestive question put by counsel for the defendant, who, at the end of the witness' description of what should appear in such cases, asked him to say whether or not the telltales which he had just enumerated and described were present in the examination that one of the physicians for the commonwealth had made, and of which the witness had read a report. The true test was not whether, from certain parts of the testimony for the commonwealth, he could say what was the cause of the death, but whether or not, considering all the data shown to have been considered by experts on the other side, it could properly be told therefrom what the cause of death was; or, if you please, on that data, assuming it to be correct, whether or not he could state the cause of death. This would have given him the proper opportunity to assert, if in his view such was the fact, that the data did not afford a sufficient basis for an opinion concerning the cause of death, and hence that he could not express one.

Proper Procedure After Revocation of License

(Oliver v. State ex rel. State Board of Medical Examiners et al. (Okla.), 251 Pac. R. 31)

The Supreme Court of Oklahoma says that respondent Oliver, a duly licensed physician and surgeon, was informed against by the state board of medical examiners on a charge of being guilty of unprofessional conduct. He was thereafter duly cited to answer the complaint, and did answer it, denying specifically the acts complained of. Subsequently, the state board heard the complaint, and evidence was introduced, after which the board found against the respondent, and ordered that his license as a physician be revoked. He gave notice of appeal to the superior court of Pottawatomie County, and also gave notice that he would apply to that court for a writ of certiorari, and an order requiring the board to certify all the records of the proceedings against him to that court. Within three days thereafter he filed his petition in the superior court of Pottawatomie County, where one of the members of the board resided, and the court issued its writ of certiorari, and ordered the board to certify the entire record to the court. Then the attorney general, on behalf of the board, moved to dismiss the writ and order, for the reason that the state statutes provide proper and adequate remedy by appeal, and that therefore the writ and order were improperly issued and made. The court sustained the motion, and dismissed the proceeding pending in the superior court. The sole question presented was: Did the superior court commit error in dismissing the writ and vacating the order? The supreme court holds that it did, and reverses its judgment, for further proceedings.

It is to be observed that, although section 33 of chapter 59 of the session laws of 1923 provides for an appeal and trial de novo (anew), yet no procedure or method of perfecting the appeal is provided for. The uncertainty of this statute was no doubt responsible for the fact that the respondent gave both notice of appeal and notice of his intention to apply for a writ of certiorari. It was quite evident that he desired to have the matter heard de novo in the superior court, as he was entitled to, and, because of the inadequacy of the statute, was fearful of taking one horn of the dilemma, lest the medical board take the other. It is not the province of this court to lay down the rules or formality governing an appeal in such cases, but it is proper for this court to say that he was entitled to a trial de novo before being deprived of the benefits of his life's profession. The methods of appeal from the various boards, commissions and courts are many and varied, and, as no procedure had been laid down for such an appeal as the respondent desired, it was impossible for him to know which method to pursue. The general rule is that the writ of certiorari will lie when there is no adequate remedy by appeal or otherwise.

The respondent was entitled to have the matter heard de novo in the superior court. This had not been done. In the opinion of the supreme court, the appeal provided for by the act under consideration was not adequate and complete, and therefore certiorari was the proper procedure for bringing the record of the board to the superior court. The supreme court must conclude that the trial court abused its discretion in dismissing the writ and vacating its order to the medical board to certify its records to the superior court. It might be that the medical board had certified the entire record to the superior court by reason of the verbal notice of appeal given by the respondent. In that case the writ would be useless; but the trial court should proceed with a hearing of the case on its merits.

Physician Not Wholly and Permanently Disabled

(Corsaut v. Equitable Life Assur. Soc. (Iowa), 211 N. W. R. 222)

The Supreme Court of Iowa says that the plaintiff was the widow of a physician and the beneficiary of a policy of insurance issued on his life, Jan. 30, 1922. The insured died, Dec. 31, 1923. A premium due on his policy, Jan. 19, 1923, was not paid. But the policy contained a provision that if the insured became wholly and permanently disabled before the age of 60, the society would waive the subsequent premiums; and the plaintiff alleged that for some time prior to Jan. 19, 1923, and thereafter until the date of his death, the insured was totally and permanently disabled by disease, and was totally insane and incompetent to transact any business or cause it to be transacted by any one in his behalf. The question was whether, on the record, the trial court erred in submitting the case to the jury, which returned a verdict in favor of the plaintiff, or whether the court should have directed a verdict in behalf of the defendant.

There was no provision for "partial disability" or for disability that should incapacitate one from performing his "usual occupation." The policy provided but one condition under which premiums were waived by the company, and that was, "if the insured becomes wholly and permanently disabled before age 60." This court cannot give to these words any other and different interpretation than their usual and ordinary meaning. "Wholly and permanently disabled" cannot logically be construed to mean partially disabled, or disabled to a limited degree, or disabled from doing certain things while able to do others. Under the record it could not be said that this case presented an instance of an insured who was "wholly and permanently disabled."

Undoubtedly the insured had a mental breakdown, and this began to be noticeable in 1922; but at or about the time that the premium in question was due, and for several months thereafter, the insured was carrying on the practice of his profession, was treating patients, and, so far as the record disclosed, without making mistakes in the very delicate and, in a sense, dangerous business of administering medicine. The only specific instance in the record looking toward a lack of judgment in this regard was an instance in which as late as December, 1922, physicians closely acquainted with him evidently deemed him competent to undertake the delicate task of administering an anesthetic, and it appeared that he administered too much of it, and it became necessary to resuscitate the patient. In the light of common knowledge it could not be said that this incident was evidence of "total and permanent disability." The number of patients shown by the books of the physician to have been treated during the period from January to June, 1923, ran into the hundreds. According to the testimony of the office girl, some of these entries were erroneous, and the physician doubtless made charges against people whom he did not treat. He was forgetful and negligent and subject to spells of exhilaration and of depression, but the undisputed fact remained that during this entire period he was in regular attendance at his office, and was continuously engaged, more or less, in treating patients, administering medicine, and practicing his profession. In June, 1923, he made an examination of an applicant for insurance, filling out the somewhat extensive blank form for such examination in detail, and received a check therefor, and indorsed the same.

Without reviewing the record further, this court is constrained to hold that a verdict to the effect that during this period the insured was "wholly and permanently disabled" was contrary to the record in the case, and could not be permitted to stand. The trial court should have sustained the

defendant's motion for a directed verdict at the close of all the testimony. No other conclusion is warranted under the record in this case under the terms of the policy in question and the rules of law applicable thereto as heretofore announced by this court. The plaintiff was charged with the burden of establishing that the insured was "wholly and permanently disabled." In this she failed. The judgment of the district court in favor of the plaintiff must be, and it is, reversed.

Liability for Death from Procuring a Miscarriage

(State v. Shortridge (N. D.), 211 N. W. R. 336)

The Supreme Court of North Dakota, in affirming a judgment of conviction of murder in the second degree, charged to have been committed by the defendant by employing an instrument or other means to procure the miscarriage of a named woman, and in that connection inflicting a wound resulting in her death, says that the defendant testified to symptoms present at the time the woman came to his hospital which indicated that a miscarriage was imminent. He explained the progressive character of the hemorrhage, and described the symptoms pointing to the necessity for the removal of the fetus, and detailed the operation. He denied the use of any instrument in connection therewith. On the other hand, the expert testimony disputed any contention that the tear in the uterus resulted from a natural abortion. There was also evidence which would warrant the jury in finding that the condition which existed until the woman consulted the defendant was the normal condition of a pregnant woman, and that there was no necessity for the performance of the operation which he admitted that he did perform. But, aside from the affirmative evidence of these facts, the jury was justified in taking into consideration the conduct of the defendant after the death of the patient. This conduct could properly be judged in the light of common experience and if, when so considered, the acts of the defendant were best accounted for by considering them as done to conceal a prior course of criminal conduct concerning the deceased, the jury might properly consider his actions as evidence of the crime charged.

In a petition for rehearing, which was denied, it was contended that the trial court erred in not instructing the jury fully on the defense indicated in the defendant's testimony to the effect that a miscarriage was imminent at the time the woman consulted him, and that the operation which he performed was necessary to save the life of the patient. It was said that the woman might very easily have inflicted on herself such a wound as would make it appear to the physician that a miscarriage and curettement were imminently necessary, and that a physician might not be held criminally responsible for an operation which he, in good faith and in the exercise of his best skill and understanding, believed to be necessary to save the patient's life. The assignment of error, in support of which this argument was advanced, was the refusal of the trial court to instruct the jury that the burden was on the state to negative that the defendant, in good faith and in the exercise of his best skill and understanding, believed the operation was necessary to save the patient's life.

The instruction given defined murder in the second degree as homicide perpetrated wilfully, unlawfully and feloniously, without any design to effect death, by a person engaged in the commission of a felony, and if the felony charged was the felony of procuring an abortion, then it was murder in the second degree. In defining the felony the defendant was charged with being engaged in committing at the time of the acts resulting in the death of the woman, the instruction defined the crime of procuring an abortion substantially in the language of section 9604 of the compiled laws of North Dakota of 1913, which makes it a felony for any person to employ an instrument or other means, with intent thereby to procure the miscarriage of a pregnant woman, unless such an operation is necessary to preserve her life. From these two instructions, following as they did the statutory definitions of murder and of abortion, it is readily apparent that the giving of the instruction requested would involve the writing into the statute of an exception to the effect that, when a physician procures the miscarriage, he shall not be criminally responsible, if he, in good faith, believed his acts to be necessary. The statutes of some states embody such an exception. In the absence of such an exception in the statute, however, either expressed or arising by fair implication, no such fact or circumstance excusing the act of a defendant is available as a defense. The North Dakota statute does not contain any express exception or any language from which this court thinks one may fairly be implied. The standard by which to determine the necessity under the statute is not the good faith or bad faith of the physician, nor does it vary with the degree of skill which he possesses. It is the one standard of necessity. On the state rests the burden of proving beyond a reasonable doubt that no necessity existed. When this fact is thus proved, it is established that the operation is unlawful and, being performed voluntarily, an intent to perform the unnecessary operation must be ascribed. It is the general criminal intent that is important in such a case. In other words, criminal intent is supplied by proof showing beyond a reasonable doubt that the acts were not necessary to save life.

Delirium Tremens and Death After Herniotomy

(Valeri v. Village of Hibbing (Minn.), 211 N. W. R. 8)

The Supreme Court of Minnesota, in affirming a decision of the industrial commission awarding compensation to a widow for the death of her husband, says that the finding of the commission that a hernia was caused by the man's attempt to lift a can of garbage was sufficiently supported by competent evidence. To relieve the hernia, a surgical operation was performed. It was followed two days later by an attack of delirium tremens, and on the fourth day by the man's death. He was an Italian by birth, had once been a saloonkeeper, and habitually drank wine which he made and kept at home. There was evidence of a somewhat unsatisfactory character that for at least two weeks before he entered the hospital for the herniotomy he had been in a state of mild intoxication. For the village, which was his employer when he suffered the hernia—a right inguinal one—it was contended that the evidence did not support a finding that the hernia was a proximate cause of his death; but the court holds that the finding that the operation set into activity delirium tremens and that death was the result of the operation and the subsequent complications was supported by the evidence. To those not versed in medical science, the statement that delirium tremens may result from a surgical operation is surprising. The popular belief is that the excessive use of intoxicating liquor is always the cause of the disorder. But the medical witnesses agreed that the operation and the shock to the nervous system and the pain and suffering that followed were contributing causes to the development of the acute delirium from which the man suffered. Granting that his habitual consumption of wine was a predisposing cause of the attack, nevertheless, if the operation was the proximate cause of his death, and the hernia resulted from a strain to which he was subjected when he tried to lift the can of garbage, his dependents were entitled to compensation. To state it a little differently, even if the habit of drinking wine was a predisposing factor in bringing on the attack of delirium tremens and the man's death, nevertheless, if the injury and the operation were material factors, in the absence of which death would not have occurred when it did, his dependents were entitled to compensation.

Physician May Testify to Probable Duration of Life

(Fournier v. Zinn (Mass.), 154 N. E. R. 268)

The Supreme Judicial Court of Massachusetts says that in this action to recover damages for personal injuries sustained in a collision of automobiles a physician called by the plaintiff was allowed, subject to the defendant's exception, to state his opinion of the probable duration of the plaintiff's life. He said that, taking into account the plaintiff's physical condition if he had not received the injury complained of, he would live about nine years; that because of the accident, he would probably live about four years from that time. This evidence was admissible. Mortality tables based on selected lives are admitted in evidence. The probable length of life of the plaintiff as affected by the injury was relevant.

Society Proceedings

COMING MEETINGS

Idaho State Medical Association, Twin Falls, August 29-31. Dr J. N. Davis, Kimberly, Secretary.

Montana, Medical Association of, Missoula, July 13-14. Dr. E. G. Balsam, 222 Hart-Albin Building, Billings, Secretary.

Washington State Medical Association, Tacoma, August 29-31. Dr. C. H. Thomson, 508 Cobb Building, Seattle, Secretary.

ASSOCIATION OF AMERICAN PHYSICIANS

Forty-Second Annual Meeting, held at Atlantic City, N. J., May 3 and 4, 1927

(Concluded from page 59)

Food Iron and Its Storage in the Body

DR. CHARLES S. WILLIAMSON, Chicago: By feeding liver for four months we can effect an iron storage which can obliterate an anemia of 33 per cent loss of blood. Applying these principles clinically to the hematopoietic system, we find that some patients recover and others show no effect from treatment. This difference may be nothing but the iron which has or has not been stored up. In young persons, particularly, the diet should be very rich in iron; the iron storage should be sufficient to carry them over periods of stress.

Circulatory Collapse in Diphtheria

DR. C. W. EDMUNDS, Ann Arbor, Mich.: There are two methods of treatment: injection of dextrose solution and injection of solution of pituitary. The heart is not primarily responsible for the failure in circulation; therefore the periphery is at fault.

Auscultatory Gap in Sphygmomanometry

DR. PAUL D. WHITE, Boston: The auscultatory gap is an interval of silence beginning below the systolic pressure and down for 50 mm. In hypertension cases there is a murmur present in 5 per cent. We have also been able to detect aneurysm compressing the subclavian artery at this point. A fifth sound phase is now differentiated. One may get a complete auscultatory gap, an incomplete gap or an inconstant diminution of the gap. The type most frequently observed is situated in the middle third of the pulse pressure, or sometimes at the upper end. The gap is noted by taking the systolic pressure beyond the gap. Pulse rates from 16 to 100 were recorded. Sixteen patients had dyspnea on exertion, and six had angina. The reasons for this gap may be: constriction; decrease in pressure; the type of pulse wave; failure of resonance of the arterial wall; peripheral resistance of the artery. No definite prognosis can be attached to the phenomena of the gap; the result depends on the underlying pathologic condition.

DISCUSSION

DR. EUGENE S. KILGORE, San Francisco: These observations constitute an important and serious criticism of prevalent teaching and practice of sphygmomanometry. There exists a general impression that auscultatory readings, being usually somewhat higher than palpatory, are nearer true blood pressure and less subject to variation by the personal factor of the examiner. As a matter of fact, however, the palpatory method itself yields figures a little above actual pressure, and therefore for theoretical nearness of readings to actual conditions the palpatory method would be preferable.

Diabetes Mellitus, Refractory to Insulin

DR. ALBERT E. TAUSSIG, St. Louis: A patient had a progressively severe diabetes and showed urticaria after injections of insulin. She went into diabetic coma and we had to give her enormous doses of insulin, but we were never able to make her sugar free. One day she had 1,100 units of insulin. In patients who showed little or no drop after intravenous injections, we tried hypodermic injections with no better result. We also tried fractional doses of 20 units hourly but never got them sugar free. After two months the response to insulin showed improvement and finally we were able to give a daily dose of 200 units. Finally, the insulin was brought down to 104 units daily. To find the reason for this refractory condition we took 10 cc. of the patient's blood and injected it into rabbits, but there was no result. We then tested for an allergic skin reaction without result. We tested the urine but found no trace of insulin in the urine. We have also considered the theory that insulin acts as a coferment, transforming blood sugar into glycogen or lactic acid. In some persons the other constituent (muscle phosphate) may be lacking or may be present in too small amounts, so that insulin is not able to do its work.

Myrtillin, a Diabetic Remedy Orally Administered

DR. F. M. ALLEN, Morristown, N. J.: There are two substances present, in association in blueberry leaves: one (myrtillin) which lowers blood sugar and a substance which raises it. These two substances occur in all plants and belong to the anabolic, catabolic activities of plants. If myrtillin is effective at all, it is as effective in doses of 1 Gm. daily as in doses of 30 Gm. The effect is to stabilize blood sugar reactions when administered orally or intravenously. The results are the same when given by mouth or by vein. The effect lasts for days or even weeks. With nine tenths of the pancreas removed, there is severe diabetes, which can be controlled by myrtillin. If only one fiftieth of the pancreas is left the animals cannot survive even with myrtillin. Autopsy shows hypertrophy of the pancreas remnant. The first step in treatment is to make the urine and blood normal with insulin or diet, then to give myrtillin, and then to watch for gradual building up of tolerance. Some cases are successful; some are not. Myrtillin is harmless. It is less prompt, less powerful and less certain than insulin. It is not a substitute for insulin.

Relation of Thyroid to Calcium Metabolism

DR. JOSEPH C. AUB, Boston: The blood calcium and blood phosphorus are normal in thyroid disease, but the amounts excreted are far above normal. In the normal control, thyroid administration raises the blood calcium and calcium excretion. In myxedema, calcium metabolism is lowered, but with administration of thyroid the blood calcium and the calcium excretion are raised. In one patient, a woman who had had tetany for seven years, there was a deficiency of calcium. Parathyroid administration increased the blood calcium and also increased the calcium excretion.

Reaction of Chronic Nephrosis to Thyroid and Parathyroid Medication

DR. J. C. MEAKINS, Montreal: We have noted improvement in nephrosis as a response to thyroid and parathyroid medication. The effect is due to the readjustment of the calcium metabolism. A woman with recurrent attacks of edema, which was resistant to diuretics, was put on parathyroid medication with good results. The urine contained casts and red cells. The urea was normal. The blood calcium was low. On parathyroid extract, 50 units a day, there was a prompt increase in serum calcium, marked increase in urine output and drop in weight. When the parathyroid was stopped, the edema returned. In case of edema and ascites, and a reverse of the albumin globulin ratio, there was an increase in blood cholesterin, the blood calcium being low. There was no response until the eighth day, when the patient responded to thyroid. This was a case of mixed glomerular nephritis with nephrosis. In another case, in which there was edema, the parathyroid had no effect on the weight. With high protein diet there was response in weight, but none in the plasma protein. A drop in weight followed thyroid medication. The cholesterin in the blood dropped. There is evidently an endocrine imbalance in these cases which varies in different patients; sometimes thyroid is effective, sometimes parathyroid. Sometimes it is not due to calcium disturbance. The plasma proteins may not be changed. We must look elsewhere than the colloids of the blood for explanation of an edema which is refractory.

DISCUSSION

DR. L. G. ROWNTREE, Rochester, Minn.: The increase in calcium under thyroid administration is very clearly shown. In two instances of parathyroid tetany, the symptoms disappeared under parathyroid administration. We felt that parathyroid extract was a real contribution to recovery.

Evaluation of Various Agents in the Reduction of Obesity

DR. SOLOMON STROUSE, Chicago: We have been unable to get any specific results in our cases. The women showed pictures suggesting disturbance of the thyroid, pituitary or ovary, but we were unable to obtain any definite clinical picture. One difficulty is the difference in the potency of the extracts and the short periods of time in which it was possible to make studies. We planned to make an experimental clinical study, using diet and administration of substances, and also control periods. Special attention was paid to family history and to changes in the menstrual cycle. Sella turcica pictures were taken. A diet of 1,200 calories was chosen. The subjects were numbered, and one group given thyroid, one pituitary, and one controlled by diet alone. The gland substances were carefully prepared. They were given for fourteen days, and if there was any influence on the weight curve the substances were continued. Most subjects lost weight on a 1,200 calory diet. Thyroid administration accelerated the weight loss.

Body Temperature

DR. ELMER H. FUNK, Philadelphia: Readings of continuous rectal temperatures were made in fifty tuberculosis patients, the thermometer being left in situ in such a manner as not to distress the patient, and the temperature recorded on a moving graph every thirty seconds. This study showed that many important variations of temperature, indicating activity of disease, are missed in individual patients through following the routine method of taking morning and evening temperatures.

Therapeutic Use of Oxygen

DR. CARL A. L. BINGER, New York: A low oxygen saturation of the blood may result in symptoms more or less serious, usually referred to the central nervous system, but also affecting the cardiorespiratory system and the whole organism. At an altitude of 12,000 feet there is a slight reduction of the oxygen saturation, from 96 to 84, yet people can have very severe symptoms from such a deprivation: headache, nausea, cyanosis, precordial pain, elevation of temperature, resulting from only a slight reduction of the normal percentage saturation. The anoxemia in clinical conditions is greater than that seen at high altitudes. With proper administration of oxygen, symptoms can be relieved and a catastrophe prevented. By treatment in the modern oxygen chamber the arterial saturation of oxygen can be restored to its normal level. In pneumonia, patients have to be kept in an atmosphere of about twice the normal oxygen content. Unless the alveolar oxygen content is increased to about 40 per cent, the oxygen deficit is not overcome. If the oxygen is raised too high, a new group of symptoms is encountered. About 60 per cent plus oxygen saturation is about the upper limit of safety.

Chamber Treatment of Anoxemia: Effect on Body Temperature

DR. W. M. BOOTHBY, Rochester, Minn.: The results obtained by us seem to have justified the expense of equipment and use of the oxygen chamber. The immediate clinical effect noted is lowering of temperature and pulse rate. Cyanosis causes elevation of temperature in addition to that caused by infection. The patient passes from alarming symptoms to a condition of safety. If removed too soon, the patient dies. The oxygen chamber treatment is reserved for acute cases. The cyanosis seen in chronic cases and in debilitated persons has been excluded, because treatment is not economically expedient. Not all patients survive. Of seventy-one patients treated, thirty-two lived. Twelve patients undoubtedly owe recovery to the use of the oxygen chamber. There was no evidence that any one was injured. The patient must be kept in the oxygen chamber until all signs of cyanosis have disappeared, and treatment should be commenced at the very first signs of cyanosis, in order to be most effective.

DISCUSSION

DR. J. H. MEANS, Boston: The difficulty in the past has been due to the ineffective application of this agent. The old time method of applying oxygen with a funnel was simply a waste of oxygen and of hospital funds. I suppose that one cannot even now say that these observations prove that oxygen decreases mortality in pneumonia. That may never be proved, but I think that the clinical experience shown is sufficiently convincing evidence to make us want to have oxygen at our disposal for treatment, not only of pneumonia, but in other disease producing severe anoxemia. The type of apparatus used at the Rockefeller Institute, and also at the Mayo Clinic, would be prohibitive for most institutions. The tent seems to be ingenious and satisfactory.

DR. J. W. MEAKINS, Montreal: The necessity of using oxygen early in the disease seems evident. The reason oxygen therapy fell into disfavor is that it was not used soon enough or intensively enough. With sufficient oxygen to remove the anoxemia, the piling up of lactic acid into the blood disappears.

Geographic Distribution of Goiter

DR. W. J. KERR, San Francisco: During the war I had the opportunity to study goiter incidence in a region covering one third of the United States; namely, Minnesota, the two Dakotas, Montana, Wyoming, Utah, Idaho, Washington, Oregon, Nevada and California. Examinations were made on 21,000 recruits at Camp Lewis, Wash., the ages ranging from 21 to 31 years. In general, the northern tier of states have the highest incidence, and correspond roughly with the map published by the U. S. War Department. Figures of the War Department indicate that exophthalmic goiter is most prevalent in regions of high incidence of endemic goiter. This is contrary to the generally accepted opinion that the frequency of one varies inversely with the frequency of the other. I believe that the army statistics are subject to error in view of the lack of knowledge of classification of goiter among the medical profession in 1917-1918. Many cases of large toxic goiter, without eye signs, were probably classed as exophthalmic goiter.

Epilepsia Tarda

DRS. DAVID RIESMAN and THOMAS FITZHUGH, Philadelphia: Epilepsia tarda is caused by a periodic insufficiency in the cerebral circulation the background for which may be anatomic, arteriosclerotic, hypertensive, due to endocrine dysfunction, or cardiac, including Adams-Stokes disease. The groups are not sharply defined but merge into one another.

Microscopic Examination of the Tonsil in Cases of Rheumatic Fever

DR. W. W. G. MACLACHLAN, Pittsburgh: The clinical observations have been correlated with the pathologic observations in tonsillar lesions. Prolonged infection is associated with greater pathologic changes. This study includes the capsular and peritonsillar tissues of the tonsils. There is an unusual amount of peritonsillar fibrosis noted. The lesions found were: endothelial proliferation of the capsular cells; granulomatous-like reactions; lymph and plasma cell infiltration; bone and cartilage; foreign body giant cells; changes in the connective tissue of the capsule and in the appearance of collogen. In choosing controls for this work we must select carefully to exclude cases of rheumatic fever. As yet we cannot state definitely that the endothelial reaction is a specific change.

Chemical and Mechanical Factors in Experimentally Produced Peptic Ulcer

DR. FRANK C. MANN, Philadelphia: Dr. Williamson and I made some studies on a method for producing experimentally gastric ulcer in dogs, identical with that in man, which would heal with characteristic processes. In this way we could follow the onset, duration and healing process of the ulcer. In our studies we have emphasized two points: first, the chemical and mechanical factors in the production of the ulcer, and, second, the healing process which is related to the treatment by surgical and medical men and is also related to chemical and mechanical factors. The site of the lesion is due to its relation in regard to the outflow of gastric contents. It is quite possible that in hemorrhages granulation tissue is swept out of the healing process.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in America for a period of three days. No foreign journals are available prior to 1921, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

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*Combination of Angina Pectoris and Severe Anemia. J. B. Herrick, Chicago.—p. 351.
*Disturbances of Cardiac Mechanism in Subacute Bacterial Endocarditis and Rheumatic Fever. M. A. Rothschild, B. Sacks and E. Libman, New York.—p. 356.
*Some Modes of Infection in Rheumatic Fever. E. P. Boas and S. P. Schwartz, New York.—p. 375.
*Heart Disease from Point of View of Public Health. A. E. Cohn, New York.—p. 386.
*Radiographic Signs of Pulmonic Insufficiency. S. P. Schwartz, New York.—p. 407.
*Transient Auricular Fibrillation in Abdominal Diseases. D. Felberbaum and B. Finesilver, New York.—p. 416.
*Cardiac Asthma. M. H. Kahn, New York.—p. 424.
*Complete Clinical Recovery After Thrombosis of Coronary Branch. H. E. B. Pardee, New York.—p. 442.
Meningitis Complicating Subacute Bacterial Endocarditis. F. J. Smith and D. M. Brumfiel, Detroit.—p. 446.
*Auricular Flutter with Complete Heart Block. F. A. Willius, Rochester, Minn.—p. 449.
Gallop Rhythm. E. Holt, New York.—p. 453.

Angina Pectoris Combined with Severe Anemia.—Herrick has now seen seven such cases. Four were reported in 1918. Of the remaining three patients, all men, one had a typical pernicious anemia and an angina of effort; the second, aged 70 and nonsyphilitic, showed evidence of vascular and myocardial degeneration, as indicated by dyspnea, often nocturnal, numerous extrasystoles and characteristic substernal pains on walking. After more than a year of annoying cardiovascular disturbance, a severe anemia became manifest. This had the characteristics of pernicious anemia, and was the immediate cause of death. The anginal manifestations lessened as he was confined to the house and finally became bedridden. The third patient, aged 63, complained of marked hematuria of more than one year's duration, pain in the right lumbar region, pallor, emaciation, dyspnea and weakness. Also, for one year there had been pain in the chest on walking. At first this pain appeared only on walking a long distance. Gradually, the amount of effort necessary to bring on the pain lessened until walking 30 feet, or even moving about the room, would bring it on. The pain often began in the left arm, and then passed to the chest. It was so severe in the sternal region that it forced him to stand still. He felt sure that death would have followed a continuance of walking. In the past history there was nothing of moment except that since 1920 he had occasionally had attacks of vertigo of the Ménière type, some of them quite severe. There was no history of syphilis. As a result of an extended study of the case, including pyelography and microscopic examination of a gland cut out from the neck, a diagnosis was made of carcinoma of the right kidney with metastases, gallstones, Ménière's disease, severe secondary anemia, arteriosclerosis and angina pectoris. Autopsy showed carcinoma of the right kidney, metastases in the liver, lung and glands, gallstones, and marked senile arteriosclerosis of the aorta and coronary arteries. The left coronary was sclerosed and solid from its mouth to its division into the left anterior and descending branches. Both these branches had calcified plaques. The muscle of the heart showed fatty infiltration with areas of fibrosis.

Disturbed Cardiac Mechanism in Subacute Bacterial Endocarditis.—The rhythm of the heart was investigated by Rothschild et al. in 123 cases of subacute bacterial endocarditis, 109 of which were in the active or bacterial phase of the disease, and fourteen in the bacteria-free or healed stage. Auricular fibrillation was encountered only once among the active group, an incidence of less than 1 per cent, and in this case the rhythm had been normal until three days before death. In three other cases in which fibrillation was noted, and in the single instance of flutter, the endocarditis had already progressed to the bacteria-free stage. These observations demonstrate how exceptional auricular fibrillation is in the active or bacteria period of the disease. On the other hand, this irregularity is observed in the bacteria-free stage with perhaps the same frequency as in chronic rheumatic valvular disease. Observations on a large series of patients with fibrillation have convinced the authors that once this arrhythmia is permanently established, there is little danger that subacute bacterial endocarditis will supervene. The observation that auricular fibrillation and active subacute bacterial endocarditis are mutually exclusive (save in an exceptional instance) is of diagnostic value. The heart was involved in sixty-one of the sixty-five cases of rheumatic fever investigated. The electrical changes were found to vary within wide limits during relatively short periods of time and in most instances disappeared. Though these changes were usually transient, it is not as yet known whether their presence denotes that the heart has suffered permanent injury. These observations are of importance, first, because they demonstrate that the myocardium is implicated in some way in almost every case of rheumatic fever, and, secondly, because the electrocardiographic signs furnish a means of detecting cardiac invasion when other signs are wanting. Judiciously correlated with the general clinical study, these electrical changes will be found to be of diagnostic value.

Modes of Infection in Rheumatic Fever.—The belief is current that, as a rule, children, sick in hospitals with rheumatic heart disease, are not retained as institutional patients for periods long enough to insure their complete recovery. With this point in view, Boas and Schwartz studied the records of fifty-three children with rheumatic heart disease, who had been hospitalized. The importance of the lung as a source of reactivation or as a portal of entry of rheumatic infection was apparent, and at times a close connection exists between bronchopneumonia and rheumatic carditis. It is important to regard rheumatic fever as a generalized systemic infection of great chronicity; hence, attention should not be directed too exclusively to one organ, such as the heart or the tonsils. The tonsils play a relatively minor rôle as sources of reinfection. It is evident that present methods for after-care of children with rheumatic heart disease are inadequate. The ordinary form of prolonged general hospital care is harmful. The problem of the rheumatic child can be met only by providing some form of extended sanatorium treatment in an effort completely to eradicate the rheumatic virus from the infected individual.

Heart Disease and Public Health.—Cohn shows that from the point of view of the public health, the problem of heart disease is not simple as was that of tuberculosis, but is manifold. It includes disability from infectious diseases, such as rheumatic fever and syphilis, and disability incident to the process of aging. The effort to relieve rheumatic fever by removing areas of infection still wants prosecuting before a judgment on its value can be given. To prevent the onset of the disease is still impossible. The disabilities dependent solely on age, the major aspect of the problem, must elude approach on the side of etiology; to provide relief from distress must be the direction in which to expend effort. The infectious aspect of heart disease is, relatively speaking, small —smaller than is often thought—but the rate of so-called chronic heart disease is high and is constantly mounting. The rise may be alarming but it is not malign.

Roentgen-Ray Signs of Pulmonic Insufficiency. — The roentgen-ray examination made by Schwartz of three cases of mitral stenosis accompanied by the murmur of pulmonic insufficiency revealed dilatation of the pulmonary artery in all positions. The particular type of dilatation of the pulmonary artery in mitral stenosis was found in all cases presenting the Graham-Steell murmur. The lower voltage of the electrocardiagrams showing right ventricular predominance and a smaller size of the T waves helps to differentiate these cases from congenital lesions of the heart. In combined cases of mitral stenosis in which aortic and pulmonic insuf-

ficiency is suspected, radiographic and electrocardiographic examinations are of value in eliminating the aortic lesions. The characteristic roentgen-ray picture and the electrocardiograph are of great help in the diagnosis.

Auricular Fibrillation in Abdominal Diseases.—Felberbaum and Finesilver have observed clinically and electrocardiographically six cases of auricular fibrillation occurring in diseases of the gallbladder, acute appendicitis, gastric ulcer during the stage of recurrence and, finally, in a case of extensive postoperative intra-abdominal adhesions. The paroxysms of auricular fibrillation occurred only during the acute stages of the abdominal disorders. The attacks were probably induced by a toxemia arising in septic foci within the abdomen. Removal of the diseased organ is likely to be followed by a permanent disappearance of the arrhythmia. Quinidine is occasionally valuable. In some patients it may induce untoward results and may prove dangerous. It is suggested that masked infections are possibly the etiologic factors for many cases of auricular fibrillation occurring in apparently healthy individuals.

Cardiac Asthma.—Kahn attempts to distinguish the various forms of respiratory distress that occur in the course of heart disease, and to elucidate each form by carefully studied cases. There is presented also a condensed review of the literature, and a clinical classification of the respiratory manifestations in heart disease, based on their pathogenesis.

Recovery from Coronary Thrombosis.—Pardee's patient, a man, aged 38, had a thrombosis of a coronary branch in January, 1924. The clinical history is typical, and the electrocardiogram furnished additional proof of a definite lesion of the heart muscle. It is interesting that after this lesion he has been able to make a recovery to nearly a normal state. It is particularly interesting that he has neither precordial pain on exertion nor unusual shortness of breath.

Auricular Flutter with Heart Block.—The case of auricular flutter with established complete heart block reported by Willius is the only case among 168 of auricular flutter occurring in the routine electrocardiographic examinations of 40,000 patients. It is of interest that the patient is able to be reasonably active with such marked disturbance of cardiac action.

American Journal of Ophthalmology, Chicago

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Cystic Degeneration in Peripheral Retina. S. Ochi, Sapporo, Japan.—p. 161.
Bilateral Hemorrhagic Detachment of Retina in New-Born, Simulating Glioma. G. S. Lachman, Baltimore.—p. 164.
Latent Ocular Muscle Imbalance. W. H. Fink, Minneapolis.—p. 168.
Chorioretinitis and Recurrent Hemorrhages into Retina and Vitreous from Multiple Focal Infection. D. E. Godwin, Long Beach, Calif.—p. 171.
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Bilateral Ptosis Cured by Hunt-Tansley Operation. C. Loeb, Chicago.—p. 191.
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Dystrophic Intracellular Opacity of Corneal Epithelium. F. H. Haessler, Milwauke.—p. 193.
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Crater-Like Cavities in Optic Disk. H. H. Tyson, New York.—p. 239.
Gold and Silver Impregnation of Cornea for Cosmetic Purposes. S. R. Gifford and A. Steinberg, Omaha.—p. 240.
Congenital Distichiasis. W. B. Doherty, New York.—p. 248.
Pemphigus of Both Eyes. M. Goldenburg, Chicago.—p. 251.
Sarcoid of Eyelids. L. Lehrfeld, Philadelphia.—p. 255.
Visual Results with Telescopic Spectacles. L. L. Mayer, St. Louis.—p. 256.
Cyclodialysis on Eyes of Rabbits. W. A. Stoutenborough, Columbus, Ohio.—p. 260.
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Bilateral Congenital Coloboma of Eyeball. A. M. Yudkin, New Haven, Conn.—p. 271.
Scissors Magnet Extraction of Foreign Body in Vitreous. W. C. Finnoff, Denver.—p. 271.
Congenital Anomaly or Productive Retinitis. C. Loeb, Chicago.—p. 272.
Soemmering Ring Luxated into Anterior Chamber. C. O. Schneider, Chicago.—p. 273.
Ossification of Choroid. G. N. Brazeau, Milwaukee.—p. 274.

Annals of Surgery, Philadelphia

85: 481-640 (April) 1927

*Treatment of Acid and Alkali Burns. E. C. Davidson, Detroit.—p. 481.
*Burns: Treatment. D. Goldblatt, New York.—p. 490.
*Postoperative Water Metabolism and Intradermal Salt Solution Test: Preliminary Report. K. E. Appel and S. Brill, Philadelphia.—p. 502.
Chronic Strain of Lumbar Spine and Sacro-Iliac Joints. J. B. Carnett, Philadelphia.—p. 509.
Fractures of Transverse Processes of Lumbar Vertebrae. R. H. Kennedy, New York.—p. 519.
Use of Russel Apparatus in Treatment of Fractures of Shaft of Femur. T. J. Ryan, Philadelphia.—p. 529.
Hepatitis: Relation to Cholecystitis. W. Martin, New York.—p. 535.
Preoperative and Postoperative Treatment of Gallbladder Patient. R. F. Carter, New York.—p. 555.
*Results of Surgery of Biliary Tract. E. L. Eliason and L. K. Ferguson, Philadelphia.—p. 565.
Foreign Bodies in Intestine. L. Carp, New York.—p. 575.
Repair of Injuries to Posterior Crucial Ligament of Knee Joint. W. E. Gallie and A. B. LeMesurier, Toronto.—p. 592.

Treatment of Acid and Alkali Burns.—Experiments made by Davidson indicate that the treatment of acid and alkali burns by washing the burnt area thoroughly with plain water is superior to neutralization. When treatment by neutralization is employed, it should be used only after the maximal amount of the caustic has been removed by thorough washing.

Treatment of Burns.—Goldblatt combats shock, and sterilizes the burn with tincture of iodine, one-half strength, followed by the application of a dressing wet with sterile solution of sodium bicarbonate, 10 per cent. The dressing is made of loose fluffs of gauze, in the folds of which several small, soft, rubber tubes, of the Carrel type, or plain tubes with fenestrations in them, are incorporated and are allowed to protrude beyond the bandage. This allows of easy saturation of the dressing, periodically, without removal of the bandages or the flooding of the bed. This dressing is maintained for from twenty-four to forty-eight hours, by which time the shock, if present at the beginning, will either have entirely disappeared or become greatly ameliorated. The dressing is then completely changed by soaking, and a new dressing of similar type is applied and kept on for two or three days longer, by which time the acute inflammatory character of the wound changes to the milder appearance of the second or secretory stage. All dressings are now removed, the blisters are opened aseptically, and the burn is exposed to sunlight during the day. This is done by exposing the wound to the direct sunlight, beginning with five minutes every two hours and increasing to twenty minutes, and in the intervals, to the air. If sunlight is not available, ordinary electric lights may be used. At night, a wet dressing of sodium bicarbonate solution is applied. Continued use of alkaline dressings is employed to soften the crusts which form because of the air exposure, and to check the process of autolysis going on in the burned tissue.

Intradermal Salt Solution Test.—There is frequently a reduced disappearance time of the intradermal salt solution wheal after operation. Appel and Brill have suggested this test as a method for determining the need of the tissues for water after operation.

Results of Surgery of Biliary Tract.—An analysis has been made of 136 cases of gallbladder disease, of which 94 + per cent have been followed by Eliason and Ferguson. A theory is advanced against the infectious origin of cholelithiasis. Of the patients with acute cholecystitis, 89 per cent have been cured by cholecystectomy, with an operative mortality of 10 per cent; 76.4 per cent have been relieved of all symptoms by cholecystostomy, with an operative mortality of 4.3 per cent; combined, 6 per cent. In the cases of chronic cholecystitis, 87.5 per cent of the patients on whom a cholecystectomy was performed were cured, with an operative mortality of 4.1 per cent; cholecystostomy did not result in any mortality, and 72 per cent of the patients were relieved; combined, 2.5 per cent. The operative mortality of the combined acute and chronic infections of the gallbladder, unassociated with other

lesions, was 3.6 per cent. Of the patients operated on for biliary obstruction, 77 per cent were relieved. The operative mortality was 23 per cent.

Archives of Internal Medicine, Chicago

39: 465-604 (April) 1927

*Hypertension in Pregnancy: Blood Calcium. E. J. Stieglitz, Chicago.—p. 465.
*Vital Capacity: Effect of Breathing Dry Air. R. D. Leas, Cleveland.—p. 475.
*Intravenous Injection of Ouabain. J. Wyckoff and W. Goldring, New York.—p. 488.
*House Dust in Etiology of Bronchial Asthma and Hay-Fever. A. H. Rowe, Oakland, Calif.—p. 498.
*Histamine Test for Gastric Function. H. L. Bockus and J. Bank, Philadelphia.—p. 508.
*Course of Hyperthyroidism Under Iodine Medication. P. Starr, Chicago.—p. 520.
Cardiac Changes Subsequent to Experimental Aortic Lesions. J. A. E. Eyster, W. J. Meek and F. J. Hodges, Madison, Wis.—p. 536.
*Chronic Acidosis in Animals: Relation to Kidney Pathologic Change. B. C. Seegal, Boston.—p. 550.
*Hemorrhagic Focal Gastroduodenal Lesions. A. B. Rivers, Rochester, Minn.—p. 564.
*Hodgkin's Disease: Predominant Localization in Nervous System: Early Diagnosis and Radiotherapy. S. Ginsburg, New York.—p. 571.
Paired Auricular Extrasystoles Simulating Interpolated Extrasystoles of Supraventricular Origin. W. D. Reid, Boston.—p. 596.

Blood Calcium and Hypertension in Pregnancy.—Stieglitz reports the results obtained in 222 blood calcium determinations from a series of cases, including normal pregnant women, pregnant women with hypertension, and some nonpregnant controls. He says that hypocalcemia is not of major etiologic significance in arterial hypertension in pregnancy, despite the fact that in such cases the relationship should be most conspicuous. During the final month of pregnancy a gradual rise in arterial tension is associated with a moderate hypocalcemia. Immediately after parturition a fall in blood pressure occurs, with a corresponding rise in the blood calcium concentration. Coincident and probably associated with the onset of lactation, a secondary elevation in arterial tension occurs, with a corresponding and equally transient hypocalcemia. The latter phenomenon permits of physiologic interpretation.

Effect of Breathing Dry Air on Vital Capacity.—An experimental method is described by Leas for testing the effect on vital capacity of breathing dry air. One hundred patients, normal as to heart and lungs, were tested. The average increase of vital capacity in these cases was 12.5 cc., or 0.3 per cent. A number of patients with cardiac decompensation were tested; there was an average increase of 190 cc., or 11.4 per cent. In patients with cardiac compensation there was an average increase of only 35 cc., or 1.3 per cent. Patients with asthma varied in their response. Several responded with an increase before and after the injection of epinephrine hydrochloride. Others responded with an increase due to the dry air and not to the epinephrine hydrochloride; the response in others was just the reverse. The conclusion seems justified that the breathing of dry air extracts enough of the moisture to increase temporarily the vital capacity in the majority of patients with bronchiolar edema, decrease the lung volume and the number of râles, and produce a sense of subjective relief. However, if the vital capacity is reduced because of bronchial obstruction other than moisture, interstitial pulmonary edema or a rigid lung due to stasis, breathing dry air does not cause any change. The procedure may also be used to differentiate between those patients with asthma whose bronchial obstruction is due chiefly to moisture and not to hypertonus or hives, and thus will be a means of selecting those patients who will improve, in all probability, in a dryer climate.

Effect of Intravenous Injection of Strophanthin.—Wyckoff and Goldring gave 248 intravenous injections of strophanthin to thirty-two patients who had heart failure, without fatalities or harmful effects. A definite cardiac effect was noted after 163 injections. The initial effect was noted in from five to twenty minutes, and the maximum effect in from fifteen to fifty minutes; as a rule, the larger the dose, the earlier the initial effect and the more delayed the maximum effect. A greater amount of strophanthin was necessary to reduce the ventricular rate in patients who had auricular fibrillation with elevation of temperature than in those without elevation of temperature. The variation in dosage was less when calculated on the basis of body weight than on the basis of total dosage. The persistence of action of the drug was variable in the cases observed, but in all except three the persistence was never longer than five days. Mild toxic symptoms were noted in three of fifty-two instances in which full therapeutic effects were obtained. It would seem that strophanthin, if given in fractional doses, may be administered with safety intravenously to patients with auricular fibrillation who have not received digitalis recently. When strophanthin is given to patients with regular sinus rhythm, greater care must be used. In these patients, clinical improvement seems to be the only criterion for full therapeutic effect; and since moribund patients may not show clinical improvement, there is greater danger of overdosage.

House Dust as Cause of Asthma and Hay-Fever.—Rowe has tested 160 new patients with asthma with stock house dust solutions; 42 per cent gave reactions and twenty patients with perennial hay-fever also gave such reactions. Dust reactions have been obtained in all age groups with the scratch test. A large number of patients gave a characteristic history of dust sensitization. The necessity of testing with a large number of stock and autogenous dust extracts is demonstrated. The data collected show that reactions to dust rarely occur without one or more other reactions to proteins commonly used in testing. Desensitization to house dust extracts which give definite reactions in the patient is said to be advisable in cases in which a marked history of dust sensitization is present.

Histamine Test of Gastric Function.—Bockus and Bank do not believe that the injection of histamine with or without a water meal is in any way comparable to the fractional gastric analysis as a general test for gastric function. They believe with Rehfus that the fractional method yields information as to gastric work, and that a definite load must be imposed on the stomach in order to judge its ability to perform its function. The normal physiologic load is food, and that substance must be used in order to get the maximum information concerning the secretory and motor function. The performance of the ordinary fractional gastric analysis and the histamine gastric analysis will yield more information than either alone in stomachs with a low acidity. Both tests should be made in such cases.

Iodine Medication of Hyperthyroidism.—According to Starr the course of hyperthyroidism under iodine medication is characterized by remission and recurrence during the administration of iodine and by a reaction, which may be extreme, after the iodine is discontinued; hence, the prolonged treatment of patients who have hyperthyroidism with iodine in dosage sufficient to produce these effects is without final benefit.

Chronic Acidosis and Kidney Changes.—Seegal gave rabbits varying doses of tenth-normal hydrochloric acid and ammonium chloride over periods of time extending from eleven days to one year. The plasma carbon dioxide capacity was lowered, and the animals excreted an acid urine. Casts and albumin were obtained constantly throughout the experimental period. At autopsy, however, the only demonstrable pathologic change in the kidney was acute degeneration of the convoluted tubules, similar to cloudy swelling, but also accompanied by marked pyknosis of the nuclei in cases of longer duration. When the giving of acid-forming substances was stopped, the kidney promptly returned to normal. The results with dogs were comparable, except that a greater dose of chloride had to be given in order to produce an acidosis, and there was less albumin and casts. The possible causal relation of acidosis to orthostatic albuminuria following strenuous exercise is discussed.

Hemorrhagic Focal Gastroduodenal Lesions.—Three cases are reported by Rivers as typical illustrations of one group of patients in whom infectious lesions are probably responsible for gastro-enteric hemorrhages. They are additionally interesting and important because they stimulate speculation as possible forerunners of chronic ulcer. Rivers is of the opinion that many of these cases of so-called appendiceal

bleeding or gallbladder bleeding are probably caused by acute lesions in the stomach or about or in the duodenum.

Involvement of Nervous System in Hodgkin's Disease.—In ten of thirty-six patients with Hodgkin's disease seen by Ginsberg, definite invasion of the nervous system was a striking clinical phenomenon. In one case, persistent pruritus was the only symptom present for one year before the advent of the constitutional symptoms of asthenia, fatigability and dyspnea on exertion. In the second case, a diagnosis of a primary spinal cord neoplasm was made. The third case suggested a traumatic spondylitis and later a transverse myelitis. In the fourth case, extensive lesions in the osseous system gave rise to pain in the shoulder and in the thigh two and one-half years before the superficial cervical lymph nodes became enlarged. Another patient had simultaneous itching in the feet extending to the knees.

Indiana State Medical Association Journal, Ft. Wayne

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Management of Infections in Genito-Urinary Tract. N. K. Forster, Hammond.—p. 129.
Diaphragmatic Hernia: Case. G. T. Johnson, Terre Haute.—p. 135.
Relation of Infected Nasal Sinuses to Optic and Orbital Disease. J. F. Barnhill, Indianapolis.—p. 140.
Uterine Hemorrhage of Benign Origin: Radiotherapy. A. M. Cole, R. T. Beeler and L. A. Smith, Indianapolis.—p. 144.
Foreign Protein in Treatment of Inflammations of Eye. M. G. Erehart, Huntington.—p. 146.

Journal of Biological Chemistry, Baltimore

72: 505-853 (April) 1927

Thyroid Apparatus: XLIV. Rôle in Chemical Differentiation of Bone During Growth. F. S. Hammett, Philadelphia.—p. 505.
Id.: XLV. F. S. Hammett, Philadelphia.—p. 527.
Solubility of Oxygen, Carbon Dioxide and Nitrogen in Mineral Oil: Transfer of Carbon Dioxide from Oil to Air. L. S. Kubie, Baltimore.—p. 545.
*Chemistry of Tea Leaves: II. Isolation of Guanine Nucleotide and Cytosine Nucleotide. H. O. Calvery, Baltimore.—p. 549.
*Vitamins A, B and C in Green Plant Tissues Other Than Leaves. E. J. Quinn, M. P. Burtis and E. W. Milner, New York.—p. 557.
Inorganic Phosphorus of Blood: Calcium Concentration. A. Grollman, Baltimore.—p. 565.
Chemical Study of Bacteria: XIV. B. Lactis Aerogenes Grown on Synthetic Mediums. D. M. Hetler, New Haven, Conn.—p. 573.
Preparation and Purification of Lecithin. P. A. Levene and I. P. Rolf, New York.—p. 587.
Configurational Relationships of Methylethyl and Methylpropyl Carbinols. P. A. Levene, H. L. Haller and A. Walti, New York.—p. 591.
*Fate of Sugar in Animal Body: IV. C. F. Cori and G. T. Cori, Buffalo.—p. 597.
Id.: V. G. T. Cori and C. F. Cori, Buffalo.—p. 615.
Acetyl Monoses: III. On α-Mannose Pentacetate. P. A. Levene and I. Bencowitz, New York.—p. 627.
*Action of Mercuric Chloride and of Hydrogen Dioxide on Bile Pigments. W. F. Von Oettingen and T. Sollmann, Cleveland.—p. 635.
Cholesterol, Lecithin and Fatty Acids in Blood of New-Born Mice with Inherited Anemia and Their Normal Litter Mates. S. B. de Aberle, W. M. Hoskins and M. Bodansky, California.—p. 643.
*Indophenol Test. H. D. Gibbs, Washington, D. C.—p. 649.
Buffering of Tissues as Indicated by Carbon Dioxide Capacity of Body. R. J. Brocklehurst and Y. Henderson, New Haven, Conn.—p. 665.
Serum Electrolytes: II. J. H. Austin, F. W. Sunderman and J. G. Camack, Philadelphia.—p. 677.
Factors Influencing Diffusibility of Calcium in Human Blood Serum. R. F. Loeb and E. G. Nichols, New York.—p. 687.
Fat-Soluble Vitamin Content of Hen's Egg Yolk as Affected by Ration and Management of Layers. R. M. Bethke, D. C. Kennard and H. L. Sassaman, Wooster, Ohio.—p. 695.
Nature of Combination Between Certain Acid Dyes and Proteins. L. M. Chapman, D. M. Greenberg and C. L. A. Schmidt, Berkeley, Calif.—p. 707.
Effect of Potassium Iodide in Shaffer-Hartmann Microsugar Reagent. W. A. DeLong, Montreal.—p. 731.
Modified Electro-Gutzeit Apparatus for Quantitative Estimation of Minute Amounts of Arsenic. D. E. Fink, Washington, D. C.—p. 737.
Oxyadenine. M. V. Buell and M. E. Perkins, Baltimore.—p. 745.
*Antiricketic Substances: VI. Distribution of Vitamin D. C. E. Bills, Evansville, Ind.—p. 751.
Influence of Salt Content of Colloids on Their Electromotive Forces. R. Beutner and A. Menitoff, Louisville, Ky.—p. 759.
Fat-Soluble Vitamin: XXVII. Quantitative Determination. H. Steenbock and K. H. Coward, Madison, Wis.—p. 765.
Influence of Light and Heat on Formation of Vitamin A in Plant Tissues. K. H. Coward, Madison, Wis.—p. 781.
Oxidation of Glucose in Alakline Solutions of Iodine. W. F. Goebel, New York.—p. 801.
Preparation of Hexonic and Bionic Acids by Oxidation of Aldoses with Barium Hypoiodite. W. F. Goebel, New York.—p. 809.
Effect of Ionization on Optical Rotation: II. P. A. Levene, L. W. Bass, R. E. Steiger and I. Bencowitz, New York.—p. 815.
Decrease in Sugar Metabolism and Destruction of Insulin by Ultraviolet Radiation. W. E. Burge and G. C. Wickwire, Urbana, Ill.—p. 827.

Nucleic Acid in Tea Leaves.—It seems very probable to Calvery that the nucleic acid, which is characterized by the presence of a pentose, is a naturally occurring product in tea leaves.

Vitamins in String Beans and Green Peppers.—Quinn, Burtis and Milner assert that both the string beans and the green peppers contain vitamin A in about the same concentration as has been found for lettuce, more than for cabbage, but considerably less than for spinach. The vitamin B concentration of about 0.3 units per gram indicated that both string beans and green peppers are as good sources of this vitamin as lettuce or cabbage but not as good as spinach. Green peppers were found to contain at least four times as much vitamin C as string beans, or about 1 unit per gram. This concentration is comparable with the highest which has been reported for any plant material, such as the raw leaf tissue of cabbage or spinach or the juice of orange or lemon.

Fate of Sugar in Animal Body.—The Coris conclude that ketosis is associated with a reduced functional atcivity of the pancreas, and in consequence of this, with a reduced capacity of the tissues to oxidize glucose.

Study of Bile Pigments.—It is shown by von Oettingen and Sollmann that the deep blue-green produced by adding mercuric chloride to bile (for instance, the Schmidt test for bilirubin in the feces) is not due to biliverdin but to a mixture of green and blue oxidized bilirubin which exists as the mercury salt.

Indophenol Test.—A test for phenols, depending on the quinonechloroimide reaction producing indophenols, is described by Gibbs. The test is delicate, both qualitatively and quantitatively, to one part of phenol in twenty million by ordinary manipulative skill. A method for the preparation of the reagent is given and the solubility of the best reagent, 2,6-dibromoquinonechloroimide, has been determined with considerable accuracy.

Fish Synthetize Vitamin D.—It is suggested by Bills that the substance, or group of substances, known as vitamin D may be synthesized by fish.

Journal of Comparative Neurology, Philadelphia

43: 1-200 (April 15) 1927

Diencephalon of Albino Rat: 2. E. S. Gurdjian, Ann Arbor, Mich.—p. 1.
Motor Nuclei in Cervical Cord of Albino Rat at Birth. A. W. Angulo y González, Lawrence, Kan.—p. 115.
Transplantation of Medulla Oblongata into Brachial Region of Cord in Amblystoma Embryos. S. R. Detwiler, New Haven, Conn.—p. 143.
Subdivisions of Facial Nucleus. J. W. Papez, Ithaca, N. Y.—p. 159.
Vascular Supply in Brain of Holocephalian—Hydrolagus (Chimaera) Colliei. E. H. Craigie, Nanaimo, B. C.—p. 193.

Journal of Comparative Psychology, Baltimore

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Feeding and Speed of Maze Learning. C. H. Warden and E. L. Haas, New York.—p. 107.
Visual Discrimination Habit in White Rat. C. J. Warden and M. Aylesworth, New York.—p. 117.
Standard Problem Box of Multiple Complexity. T. N. Jenkins, New York.—p. 129.
Instinct and Intelligence in Rats and Cats. W. McDougall and K. D. McDougall, Boston.—p. 145.
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Id. R. C. Lumpkin, Baltimore.—p. 181.
Imaginative and Ideational Behavior and Learning. H. M. Johnson, Pittsburgh.—p. 187.

Journal of Infectious Diseases, Chicago

40: 469-548 (April) 1927

Production of B. Abortus Aggressin. S. J. Schilling and W. L. Bleecker, Fayetteville, Ark.—p. 469.
Magnesium Ammonium Phosphate Crystals in Aerobic Cultures of B. Abortus and B. Melitensis. I. F. Huddleson and O. B. Winter, East Lansing, Mich.—p. 476.
*Specificity of Weil-Felix Reaction in Brill's Disease. L. C. Havens, Montgomery, Ala.—p. 479.

Relation of Hydrolytic Decomposition Products of Proteins to Bacterial Growth. G. J. Hucker and D. C. Carpenter, Geneva, New York.—p. 485.
Standardization of Bacterial Vaccines by Photometric Methods. A. B. Baylis, New York.—p. 497.
*Influence of Purulent Infection on Development of Experimental Scurvy. H. L. Jaffe, New York.—p. 502.
Leptospira Biflexa: (Wolbach and Binger, 1914, Emend. Noguchi, 1918). V. T. Dimitroff, Boston.—p. 508.
Soluble Antigens of B. Enteritidis. S. E. Branham and E. M. Humphreys, Chicago.—p. 516.
Growth of Cl. Botulinum and Cl. Sporogenes in Veal Infusion Broth Under Reduced Pressure. G. M. Dack, W. A. Starin and M. Werner, Chicago.—p. 525.
Spontaneous Infections of Guinea-Pigs: Pneumococcus, Friedländer Bacillus and Pseudotuberculosis (Eberthella Caviae). A. Branch, New York.—p. 533.

Specificity of Weil-Felix Reaction in Brill's Disease.—Havens states that the results obtained in Alabama with the macroscopic Weil-Felix test in more than 100 cases of Brill's disease indicate that the reaction is elicited in about 95 per cent of cases during the second week or later. It is usually negative during the first week, becoming increasingly stronger until convalescence. Tests including more than 1,000 negative results demonstrate its specificity. Agglutination of *B. proteus* X19 in dilutions higher than 1:80 has not been obtained in other disease conditions. The microscopic Weil-Felix test with dried blood has yielded false positive results and, for this reason, is regarded as being of doubtful value. The agglutinins for *B. proteus* X19 in serums from patients with Brill's disease and also in serums from rabbits after the injection of guinea-pig brain virus are relatively thermolabile; they are destroyed by heating the serum at 62 C. for one hour.

Influence of Infection on Development of Scurvy.—Six of eleven infected guinea-pigs placed on a scurvy diet by Jaffe developed severe purulent infections and did not develop scurvy within from nineteen to forty days. Uninfected guinea-pigs on the same diet developed scurvy in from thirteen to eighteen days. The injection of *Staphylococcus albus* into animals with early signs of scurvy caused a rapid fatal termination. The course of scurvy was not influenced by the injection of standard staphylococcus vaccine. These studies suggest the possibility that antiscorbutic substances may be developed by bacterial growth in the tissues, or as a result of the action of absorbed toxins on the internal organs.

Maine Medical Association Journal, Portland

18: 61-81 (April) 1927

Forceps and Podalic Version. F. S. Kellogg, Boston.—p. 61.
Causes of Limitation of Motion and Ankylosis After Fractures in and About Joints. H. W. Lamb, Portland.—p. 74.

Medical Journal and Record, New York

125: 365-436 (March 16) 1927

The Physician: Larger View. N. M. Butler, New York.—p. 365.
Psychopathology of Treatment of Tuberculosis. M. Pollak, Albuquerque, N. M.—p. 370.
Chronic Appendicitis Simulating Peptic Ulcer: Two Cases. A. A. Salvin, New York.—p. 372.
Cancer: XII. Dead Cell. W. Meyer, New York.—p. 375.
Chronic Ulcerative Colitis. S. Wendkos, Philadelphia.—p. 379.
Laryngeal Varices. C. J. Imperatori, New York.—p. 382.
Prominent Causes of Sudden Death. M. Grossman, New York.—p. 384.
Tooth Decay and Balanced Metabolism in Infancy and Childhood. G. D. Scott, New York.—p. 386.
Cycles of Thought in Biologic Science: II. Aristotle and Heirs of His Entelecheia or Body Soul. J. Wright, Pleasantville, N. Y.—p. 388.
Pain. A. E. M. Woolf, London.—p. 393.
Psychoneuroses. F. R. Starkey, Detroit.—p. 397.
Community Clinics and Instruction Under State Hospital Supervision. J. A. Jackson and H. V. Pike, Danville, Pa.—p. 400.
Treatment of Neurosyphilis. S. Hecht, New York.—p. 403.
Psychology of Modern Art. A. Gordon, Philadelphia.—p. 406.
Therapeutic Uses of Radium Emanation. J. Muir, New York.—p. 409.
Phagocytic and Other Effects Produced in Administration of Gold in Tuberculosis. J. W. Kime, Fort Dodge, Ia.—p. 411.

125: 513-584 (April 20) 1927

Therapy of Pellagra. G. M. Niles, Atlanta, Ga.—p. 513.
*Diagnosis of Pulmonary Tuberculosis. M. Schwartz, Philadelphia.—p. 516.
Cancer: XIV. Unbalancing of Serum Salts; Influence on Cell Metabolism. W. Meyer, New York.—p. 519.
Laryngography. D. H. Jones, New York.—p. 523.
Radiation Therapy. F. T. Woodbury, New York.—p. 524.
*Drying Up Lactating Breasts. C. L. Larkin, Waterbury, Conn.—p. 527.
Treatment of Hernia by Subcutaneous Injection. I. Mayer, Detroit.—p. 528.
Composition of Milk from Diseased Cows. T. S. Harding, Beltsville, Md.—p. 531.
Literature of Science and Art. R. Kingman, New York.—p. 533.
Peripheric Expressive or Articular Speech Defects: Cleft Palate. N. Y. P. Van Baggen, The Hague, Holland.—p. 535.
Radium Emanation in Treatment of Cervical Cancer. J. Muir, New York.—p. 538.
Treatment of Tuberculosis. H. v. Samson-Himmelstjerna, Reval, Esthonia.—p. 540.
Roentgen Rays, Radium, Endothermy and Other Physical Agents in Dermatology. J. J. Eller, New York.—p. 541.
*Woolly Hair Nevus of Scalp. F. Wise, New York.—p. 545.
Treatment of Furuncle of Ear by Ionization of Tin. G. B. McAuliffe, New York.—p. 547.
Psoriasis. S. Gordon, Philadelphia.—p. 548.
Therapeutics of Infantile Eczema. L. H. Dembo and J. E. Fisher, Cleveland.—p. 552.
Precancerous Dermatoses. S. Feldman, New York.—p. 554.
Plagues of Chester. C. G. Cumston, Geneva, Switzerland.—p. 557.
Doctor and Patient in Addison's Journals. L. J. Bragman, Syracuse, N. Y.—p. 558.

Diagnosis of Pulmonary Tuberculosis.—Schwartz has analyzed 150 cases, of which 68 per cent occurred in the third and fourth decades of life. Twenty-six per cent of the patients gave a family history of the disease; 42 per cent had influenza, 16 per cent pleurisy, and 13.3 per cent pneumonia; 26.7 per cent had unilateral and 73.3 per cent bilateral involvement; 43.3 per cent of the patients were well nourished. The most frequent symptoms are enumerated, and the importance of careful history taking is stressed.

Drying Up Lactating Breasts.—To dry up lactating breasts, Larkin recommends the use of the AC or Bender bandages. He has found them to be far superior to the usual inelastic sheeting or muslin bandages formerly employed.

Hereditary Woolly Nevus of Scalp.—Wise reports two instances of a congenital anomaly of the scalp hair of two unrelated children. In the first case, a child of Jewish parentage and a native of New York, there was an associated nevus pigmentosus linearis of the neck and arm; in the second, a child born in Syria and of Syrian parentage, the birthmark was confined to the hair. In neither case was there any sign of pigmentation (or depigmentation) of the scalp from which sprang the anomalous growth of hair. The scalps in both children appeared to be entirely normal. In the first case, the right parietal and entire occipital portions of the scalp were covered by a dense growth, over a uniform area, of fine, golden brown, extremely soft and silky hair, which, to the stroking hand, imparted a distinctly "woolly" sensation. The margins of the area covered by abnormal hair were rather sharply defined, but blended with the margins of the adjacent normal hair without showing lines of demarcation; nor was there a gradual admixture of normal and abnormal hair at the borders of the affected areas. In the birthmark area there were no normal hairs. The scalp itself was entirely normal. The back of the neck, a little to the right of the midline, and extending from the hairline down to the first dorsal vertebra, was the seat of a slightly roughened, dark brown, striated, linear, pigmentary nevus, appearing in the form of three parallel narrow bands. On the right elbow and wrist there were several similar formations, with faint evidences of connecting linear bands between the neck and wrist lesions. The upper portion of the pigmented striae blended with the hair nevus at the nape of the neck. In the second case, the entire top of the scalp, from the frontal hair line to the back of the scalp and extending down the back of the scalp to a line approximately at the level of the tops of the ears, and the parietal portions of the head, presented a heavy growth of light brown, soft, kinky, fine textured hair of a decided woolly feel. There was a sharp line of demarcation between the normal hair and the birthmark hair, and there was no blending of the two. The scalp appeared normal.

Mental Hygiene, Albany, N. Y.

11: 1-224 (Jan.) 1927

What Has Mental Hygiene to Offer Childhood? E. L. Richards, Baltimore.—p. 1.
Family Situation and Personality Development. P. Blanchard, Philadelphia.—p. 15.

Formation of Life Patterns. L. B. Hohman, Baltimore.—p. 23.
Behavior Difficulties of Children. I. S. Wile, New York.—p. 38.
Personality Make-Up and Social Setting of Fifty Jealous Children. S. Foster, Boston.—p. 53.
Psychiatric Social Workers' Technic in Meeting Resistance. M. E. Rannells, Bridgeport, Conn.—p. 78.
Psychology: Vocational Application: Literature. D. Fryer, New York. —p. 124.
Psychologic vs. Psychiatric Method in Industry. E. L. Ray, New York. —p. 140.
Pathologic Nature of Mental Defect. H. W. Potter, Thiells, New York. —p. 148.
Statistics of Mental Diseases. H. M. Pollock, New York.—p. 156.

Physical Therapeutics, Baltimore

45: 165-220 (April) 1927

*Treatment of Multiple Sclerosis by Diathermy. J. W. Stephenson, New York.—p. 165.
*Acute Local Infection Treated by Heat and Radiant Energy. F. de Kraft and others, New York.—p. 176.
*Effect of Mechanical Vibration on Spinal Reflexes. M. L. H. A. Snow and others, New York.—p. 188.

Diathermy Treatment of Multiple Sclerosis.—Stephenson reports five cases of multiple sclerosis that he treated by diathermy. In two of the cases, during the course of treatment, there were distinct evidences of exaggeration of symptoms referable to morbid changes within the cranial cavity, without evidence of an increase of the symptoms referable to spinal cord involvement. Stephenson believes that this argues strongly for at least a control of the spinal cord disease by diathermy.

Heat Treatment of Local Infections.—Certain local infections may become virulent in type, spreading rapidly and endangering life. In cases of this extreme type, de Kraft et al. assert that prompt utilization of various rays of the spectrum—high degree dry heat, radiant light and heat, diathermy, ultraviolet rays and roentgen rays—has proved effective.

Effect of Mechanical Vibration on Spinal Reflexes.—According to Snow and others, mechanical vibration induces reflex effects through spinal vibration. It stimulates or inhibits according to the strength and the length of treatment, and so induces a reflex of contraction or of dilatation over a specific site. It stimulates relaxed muscles and relieves muscular tension, as the effect of spinal vibration. It may raise or lower blood pressure if uncomplicated, when applied at respective regions. Mechanical vibration induces visceral reflex effects, as of contraction or dilatation, demonstrable by percussion over specific spinal areas for the heart, lungs, liver, spleen and stomach.

Psychiatric Quarterly, Albany, N. Y.

1: 1-135 (Jan.) 1927

Neurotic Reaction: Symbolism. L. E. Hinsie, New York.—p. 5.
*Constitutional Anomalies of Epileptics. L. P. Clark, New York.—p. 26.
Duties of Medical Inspectors. G. W. Mills, New York.—p. 44.
Parole System in Massachusetts. T. A. Hoch, Boston.—p. 48.
Development and Extension of Parole System of New York State Hospitals. H. M. Pollock, New York.—p. 53.
Classification of Defective Delinquents. V. C. Branham, Ellenville, N. Y. —p. 59.
*Training Idiot and Imbecile. G. J. Veith, Thiells, N. Y.—p. 70.
*Therapeutic Value of Glucose: Carbohydrate Metabolism of Feebleminded. A. N. Bronfenbrenner, Thiells, N. Y.—p. 85.
Defective Delinquent as State Problem. L. J. Palmer, Napanoch, N. Y. —p. 91.
Inadequate Childhood Training Factor in Mental Disease. C. H. Bellinger, Utica, N. Y.—p. 96.

1: 141-266 (April) 1927

State and Medical Center. F. W. Parsons, Buffalo.—p. 141.
Care of Mental Defectives in New York State. S. Brown, II., New York.—p. 146.
Problem of Epilepsy in New York State. W. T. Shanahan, Sonyea, N. Y.—p. 160.
Clinical Differentiation of Functional Nervous and Mental Disorders. G. H. Kirby, New York.—p. 184.
Psychology of Mythology. C. O. Cheney, Utica, N. Y.—p. 198.
Malaria Treatment of Schizophrenia. L. E. Hinsie, New York.—p. 210.
Epileptics in Institutions in United States. H. M. Pollock and E. M. Furbush, New York.—p. 215.
Congenital Word Blindness: Case. B. M. Minoque, Thiells, N. Y.—p. 226.
Investigation of Oedipus and Homosexual Complexes in Schizophrenia. T. R. Robie, Poughkeepsie, N. Y.—p. 231.
Circulatory Ratings in Mental Defectives. H. W. Potter, Thiells, N. Y. —p. 242.
New Mental Hygiene Legislation in New York. L. M. Farrington.—p. 245.

Constitutional Anomalies of Epileptic Persons.—Clark contends that the nature and degree of the epileptic attack portray the depth of regression even to that of metro-erotism, as seen in the deepest states of coma. There does not exist a constant physical substrate for the epileptic constitution. That is, no essential alteration is shown that is not seen in an equal number of other individuals who are, perhaps, biologically inferior either as a result of their inheritance or because of the continued activity of their disease phenomena. Just what part is due to the latter, and what proportion may be ascribed to the fundamental constitutional inheritance, are matters concerning which anthropologic data as yet offer no line of demarcation. If one wished to take a broader psychoanalytic view, one might say that organic anomalies pave the way to inferiority of mechanism; or that many of the defects present are, at least so far as functioning is concerned, somatic manifestations of narcistic defect colligative of those known to exist in the psychic constitution of epileptic narcism.

Training Idiot and Imbecile.—Veith asserts that, contrary to current belief, the idiot and the imbecile can be trained to perform quite difficult tasks. They are capable of making only a few associations of the most simple nature, and those resulting from identical experiences. Thus, their training involves not only laborious but continuous effort in taking them away from their world of inferiority and giving them greater contact with their outside world.

Carbohydrate Metabolism of Feebleminded. — Bronfenbrenner has found that the metabolic mechanism of mental defectives is impaired to some extent. Their impairment has been shown by their peculiar handling of certain substances which are derived from both food and the disintegration products of bodily cells, and which are the source for the after-hydrolysis fraction of urinary reducing substances. The high carbohydrate diet, resulting in an increased quantity of glucose circulating within the metabolic channels, appears to compensate for the impairment. Therefore, the customary high carbohydrate diet of institutions for feebleminded is to be regarded not as a matter of a chance or of administrative economy, but as an automatically established way of meeting the metabolic peculiarity of the kind of patients cared for. Inflammation is always accompanied by increased disintegration of body cells, which raises the demand for metabolic efficiency. Therefore, the administration of dextrose in cases with retarded healing might be of therapeutic value because it induces an adequate handling of the products of cell disintegration. This conception has been checked up on two clinical cases with promising results.

Southwestern Medicine, Phoenix, Ariz.

11: 159-202 (April) 1927

Early Medical Conditions in Arizona. W. V. Whitmore, Tucson.—p. 159.
Type of Gastroptosis Demanding Surgery. H. Crouse, El Paso.—p. 163.
Artificial and Natural Light. O. Egbert, El Paso.—p. 166.
Etiology of Bronchial Asthma in Tuberculous. M. Pollak, Albuquerque. —p. 168.
Chronic Pancreatitis: Rôle of Mumps and Measles. F. D. Garrett, El Paso.—p. 172.
Hematomas in Fractures. W. L. Brown and C. P. Brown, El Paso.—p. 175.
County Medical Society. J. M. Greer, Phoenix.—p. 176.
Id.: Relation to State and National Organizations. D. F. Harbridge, Phoenix.—p. 179.
Medical Ethics. H. B. Gudgel, Phoenix.—p. 181.
Oral Diagnosis: How Obtained. L. A. Neil, El Paso.—p. 182.
Choriocarcinoma: Case. M. B. Culpepper, Carlsbad, N. M.—p. 185.

Surgery, Gynecology and Obstetrics, Chicago

44: 577-720 (May) 1927

*Hydatid Cysts of Liver. H. W. Mills, San Bernardino, Calif.—p. 577.
*Pyelovenous Backflow at Time of Pyelography. F. Hinman, San Francisco.—p. 592.
*Hemorrhagic Cysts of Kidney. E. S. Judd and H. E. Simon, Rochester, Minn.—p. 601.
*End-Results in Breast Cancer: Five Hundred and Sixty-Three Cases. B. F. Schreiner and A. T. Stenstrom, Buffalo.—p. 608.
Experimental Study of Cholecystenterostomy. M. Trautmann, H. J. Robbins and C. C. Stewart, Philadelphia.—p. 612.

*Effects of Thyroidectomy and Thyroid Feeding on Cardiac Output. A. Blalock and T. R. Harrison, Nashville, Tenn.—p. 617.
*Latent Postoperative Tetany. H. M. Richter and L. M. Zimmerman, Chicago.—p. 627.
Endometrial Growth in Right Labium Majus: Origin. J. S. Henry, Montreal.—p. 637.
*Prognosis of Endometrial Carcinoma as Indicated by Histologic Structure. W. S. Lindsay, Saskatoon, Canada.—p. 646.
*Partial Gastrectomy for Cancer of Stomach. D. C. Balfour, Rochester, Minn.—p. 659.
*Splinting of Vertebral Column in Pott's Disease. F. Lange, Munich.—p. 668.
Technic for Perineal Prostatectomy: Preservation of External Sphincter. J. H. Morrissey, New York.—p. 671.
Arthrodesis of Ankle. G. F. Straub, Honolulu, Hawaii.—p. 676.
Traumatic Rupture of Diaphragm: Recovery Following Operation. W. E. Shackleton, Kalamazoo, Mich.—p. 684.
*Method of Obtaining Costal Cartilage for Plastic and Reconstruction Surgery. J. D. Kelly, New York.—p. 687.
*Ethylene-Oxygen Anesthesia. C. I. Allen and M. Murray, Detroit.—p. 690.
Radium Therapy in Some Ocular Conditions. W. S. Franklin and F. C. Cordes, San Francisco.—p. 701.
Shortening of Bones of Leg to Correct Inequality of Length. J. A. Brooke, Philadelphia.—p. 703.

Hydatid Cysts of Liver.—Mills analyzes sixty-three cases, thirty-nine of which were seen in California. Thirty-seven cases were treated by marsupialization and drainage. Recurrence was noted in two cases. One case was notable in that embolism of the brachial artery occurred as a sequel, embolectomy being performed.

Pyelovenous Backflow During Pyelography.—It is definitely stated by Hinman that the pyelovenous backflow frequently occurs at the time of pyelography, and that tubular backflow for a short distance into the papillary ducts also occurs.

Hemorrhagic Cysts of Kidney.—Two cases seen in the Mayo Clinic are reported by Judd and Simon, and thirteen others on record are analyzed.

End-Results in Breast Cancer.—Statistics quoted by Schreiner and Stenstrom show definitely that results in operable cases are best obtained by radical operation followed by irradiation, although in some instances, irradiation alone has proved of curative value. In the hopeless, inoperable cases of breast cancer, radium and roentgen-ray treatment has made the remaining days of the patient more comfortable.

Effects of Thyroidectomy and Thyroid Feeding on Cardiac Output.—The effects of thyroidectomy and of the administration of thyroid substance on the cardiac output of dogs have been studied. The following results have been obtained by Blalock and Harrison: The cardiac output is increased in hyperthyroidism and decreased in hypothyroidism. The change in cardiac output is usually somewhat greater than the change in metabolic rate. The administration of iodine to animals receiving thyroid substance is followed by a marked decrease in cardiac output, as well as in metabolic rate. This decrease continues for from six to ten days, after which the cardiac output and metabolic rate increase rapidly. The metabolic rate and cardiac output remain elevated for two months or longer after the cessation of thyroid feeding. The former returns to normal before the latter. Digitalis decreases the output of the heart of dogs with hyperthyroidism, but this effect is somewhat less than the effect on the cardiac output of normal dogs. The oxygen pressure and carbon dioxide pressure may be important factors in the regulation of the cardiac output. Thyroid extract should be used with caution in myxedematous patients presenting evidence of cardiac weakness, and withheld when cardiac decompensation supervenes. Iodine therapy is valuable for a time in patients with hyperthyroidism, and especially so in patients with pronounced cardiac symptoms. The prolonged administration of iodine is probably useless. The administration of digitalis is indicated in hyperthyroidism.

Latent Postoperative Tetany.—Parathyroid injury after goiter operations was demonstrated by Richter and Zimmerman in 14 per cent of the cases. In most of these cases the tetany is purely "latent," and is not detected unless objective examination is made for the signs. Symptoms and signs are for the most part transitory, and probably represent mild, temporary disturbances in parathyroid function. Tetany may be controlled by changing the intestinal flora to one of the aciduric type, and by the administration of calcium by mouth. This regimen, which presumably prevents absorption of toxic materials liberated in the colon from proteolytic putrefaction, consists of a meat-free diet, liquids in large quantities, including at least 1 quart of milk daily, and lactose, from 200 to 300 Gm. in the twenty-four hours. The authors have used Collip's active principle of the parathyroid with very gratifying results. Its use is desirable in those cases in which clinical manifestations do not disappear within a relatively short period of time.

Prognosis of Endometrial Carcinoma.—Seventy cases of fundus carcinoma were studied by Lindsay. Adenoma malignum (twenty-three cases with two deaths) is of relatively low grade malignancy, and responds well to treatment. Preoperative irradiation and hysterectomy gave the best results (seven cases, no deaths), but the almost equally good results of irradiation alone (ten cases, one death) would seem to warrant its selection as the treatment of choice. Adenocarcinoma (thirty cases with twenty-one deaths) offers a very bad prognosis, and demands rigorous treatment from the outset. The best results were obtained by preoperative irradiation and hysterectomy, each of which alone was unsatisfactory. Suspicious cases of fundus carcinoma showed no mortality due to cancer, and appeared to be effectively controlled by irradiation alone. Adeno-acanthoma and adenomyocarcinomatosis have a high mortality and require the same treatment as adenocarcinoma. Embryonal carcinoma was present in two cases only, and the results are in conformity with the belief that better results are obtained in this class of case by irradiation alone than by operation.

Partial Gastrectomy for Cancer.—Partial gastrectomy was performed 120 times in the Mayo Clinic for malignant disease of the stomach and nine deaths resulted, a mortality of 7.5 per cent. Balfour describes the technic employed.

Splinting Vertebral Column in Pott's Disease.—Lange uses one splint made of rust proof steel placed on one side of the spinal column, with a celluloid splint on the other. These splints are fixed with thin steel wire of the rust proof variety instead of silk. The advantage of steel is that it has greater stability than celluloid. A 3 to 4 mm. steel splint would compare quite favorably in stability with a 10 mm. celluloid splint.

Use of Costal Cartilage in Plastic Surgery.—Kelly uses wood carvers' chisels to remove a piece of costal cartilage of any desired size and form. The cartilage may be removed much more easily, more rapidly, with less danger, and more accurately than can be done with the older methods of removal.

Ethylene-Oxygen Anesthesia.—Allen and Murray have found that ethylene-oxygen anesthesia is superior to every other type of anesthetic in every way. Postanesthetic pulmonary complications are rare. Postanesthetic nausea and vomiting occurred in 39.6 per cent of major cases. The cost of ethylene-oxygen anesthesia is about seven and one-half cents a minute.

Texas State Journal of Medicine, Fort Worth

22: 733-794 (April) 1927

Fundamental Causes of Disease. W. S. Bainbridge, New York.—p. 740.
Rupture of Diaphragm: Case. F. C. Beall, Fort Worth.—p. 744.
Diaphragmatic Hernia: Case. J. H. Gambrell, El Paso.—p. 748.
Roentgen-Ray Treatment of Toxic Goiter. J. M. Martin, Dallas.—p. 751.
Radiation for Fibromyoma of Uterus. J. B. Johnson, Galveston.—p. 755.
Roentgen-Ray Treatment of Uterine Myoma and Menorrhagia. C. P. Harris, Houston.—p. 757.
Railroad and Industrial Surgeon. A. P. Howard, Houston.—p. 759.
Traumatism of Optic Nerve. O. S. Hodges, Beaumont.—p. 761.

West Virginia Medical Journal, Charleston

23: 169-224 (April) 1927

Peptic Ulcer. M. Willis, Richmond, Va.—p. 169.
Early Pulmonary Tuberculosis. G. R. Maxwell, Morgantown.—p. 174.
Pulmonary Tuberculosis: Diagnosis. H. G. Wildman, Hopemont.—p. 177.
Torula Infection of Palate and Nasopharynx. E. L. Jones, Wheeling.—p. 184.
Middle Meatus in Paranasal Sinusitis. J. B. McMurray, Washington, Pa.—p. 188.
Radiography in Paranasal Sinusitis. H. V. Lusher, Huntington.—p. 190.
Trachoma. W. C. Thomas, Huntington.—p. 193.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Biochemical Journal, London

21: 1-264, 1927

*Variations in Chemical Composition of Normal Human Colostrum and Early Milk. M. F. Lowenfeld, S. T. Widdows, M. Bond and E. I. Taylor.—p. 1.
Significance of Gelatin for Bacterial Growth. B. S. Platt.—p. 16.
Peroxide Formation by Pneumococcus: Relation to Bacterial Oxidation-Reduction Reactions. B. S. Platt.—p. 19.
Plant Oxidation: Nature and Reactions of "Tyrin." B. S. Platt and A. Wormall.—p. 26.
*Micro-Estimation of Chlorine in Whole Blood Serum or Corpuscles. F. H. Smirk.—p. 31.
*Micro-Estimation of Iron in Blood. F. H. Smirk.—p. 36.
*Carbohydrate Metabolism: II. Influence of Methylglyoxal and Other Possible Intermediaries on Insulin Hypoglycemia. W. O. Kermack, C. G. Lambie and R. H. Slater.—p. 40.
Heat-Denaturation of Proteins: IV. Free Basic and Acidic Groups of Fresh and Denatured Hemoglobin. P. S. Lewis.—p. 46.
Fate of Desoxyglucose in Rabbit. L. B. Winter.—p. 54.
Kinetics of Hemolytic Systems: II. Series of Ryvosh. E. Ponder.—p. 56.
*Biochemistry of Aqueous Humor. S. Duke-Elder.—p. 66.
Absorption Spectrum of Cholesterol: Biologic Significance to Vitamin D. I. M. Heilbron, E. D. Kamm and R. A. Morton.—p. 78.
Feeding of Xanthophyll to Rats on Diet Deficient in Vitamin A. S. G. Willimott and T. Moore.—p. 86.
Tyrosinase-Tyrosine Reaction. H. S. Raper.—p. 89.
Constitution and Synthesis of Spermidine. H. W. Dudley, O. Rosenheim and W. W. Starling.—p. 97.
Growth of Yeast: III. Influence of Volume of Medium Employed. G. L. Peskett.—p. 104.
Stomach Oil of Fulmar Petrel. O. Rosenheim and T. A. Webster.—p. 111.
Kinetics of Hemolytic Systems: III. Time-Dilution Curves and Zones of Action. E. Ponder.—p. 119.
Relation of Cholesterol to Vitamin D. O. Rosenheim and T. A. Webster.—p. 127.
Cholesterol Content of Normal Human Plasma: I. J. A. Gardner and H. Gainsborough.—p. 130.
Id.: II. Attraction of Proteins of Plasma for Sterols. J. A. Gardner and H. Gainsborough.—p. 141.
Effects of Changes in Environment on Resting Bacteria. J. H. Quastel and W. R. Woolridge.—p. 148.
Chemistry of Thyroxine. C. R. Harington and G. Barger.—p. 169.
Echinochrome. R. K. Cannan.—p. 184.
Inorganic Phosphate and Labile Form of Organic Phosphate in Gastrocnemius of Frog. P. Eggleton and G. P. Eggleton.—p. 190.
Preparation of Yeast-Juice by Buchner's Method. A. Harden and F. R. Henley.—p. 196.
Aerobic and Anaerobic Metabolism of Common Cockroach: II. W. K. Slater.—p. 198.
Phosphorus Compounds of Milk: III. Dephosphorized Caseinogen: Action of Alkali on Caseinogen. C. Rimington.—p. 204.
*Effect of Excessive Radiation with Ultraviolet Light on Growth of Rats. J. L. Leigh-Clare.—p. 208.
*Antirachitic Value of Fresh Spinach. M. H. Roscoe..—p. 211.
Optical Rotatory Power and Dispersion of Proteins. L. F. Hewitt.—p. 216.
Ether-Soluble Substances of Cabbage Leaf Cytoplasm. A. C. Chibnall and H. J. Channon.—p. 225.
Id.: II. Calcium Salts of Glyceridephosphoric Acids. A. C. Chibnall and H. J. Channon.—p. 233.
Analysis of Proteins: VIII. Estimation of Cystine in Modified Van Slyke Method. R. H. A. Plimmer and J. Lowndes.—p. 247.
Changes in Amino-Acids in Proteins of Hen's Egg During Development. R. H. A. Plimmer and J. Lowndes.—p. 254.
Estimation of Chlorine in Milk. A. D. Husland and W. Godden.—p. 259.
Bacterial Decomposition of Tobacco as Leading to Formation of Bases in Presence of Water. A. Faitelowitz.—p. 262.

Chemical Composition of Colostrum and Early Milk.—Lowenfeld et al. studied the chemical composition of milk of the first fourteen days of lactation. There appears to be a difference between the milk of primiparas and multiparas with regard to the behavior, in the early days of lactation, of the protein and fat. The protein and ash content of the milk vary regularly according to the day of lactation, being very high in primiparas, less so in multiparas, on the second and third days, and falling steeply during the first week to reach an approximately normal level. The sugar content varies also according to the day of lactation, but inversely as the protein, and less regularly, being at its lowest in the early days and rising irregularly to a normal level by the end of the second week. The fat content varies only according to the physical conditions of the breast and the actual extraction, and not in relation to the day after parturition, but in primiparas the general behavior is reversed in the first days of lactation. The calcium content varies up to the fifteenth day among individual women, but not according to any factors concerned with individual lactation, and is uninfluenced by factors local to the breast. There is some possibility that the protein content of the milk rises slightly at the end of a single feed, the difference being greater when the samples are taken in relation to an actual feed than when only the first and last portions of an artificially emptied gland are considered. The lactose content of the milk appears to be higher at the beginning than at the end of a feed. The total solids vary roughly as the fat.

Estimating Blood Chlorides.—A simple and rapid method of estimating blood chlorides on 0.2 cc. is described by Smirk. The principle of this method is the destruction of the organic matter of the blood by ammonium persulphate and concentrated nitric acid, with the usual precipitation of the chlorine as silver chloride by excess of silver nitrate. The excess is titrated against alcoholic ammonium thiocyanate solution, a concentrated solution of ferric alum being used as the indicator. The titration is performed in the presence of acetone, which intensifies the end point by decreasing the dissociation of the ferric thiocyanate, and for a similar reason renders it more permanent. This enables a series of titrations to be brought to the same depth of red, which, with the sharpened gradation of the end-point coloration, permits accurate comparative observations to be made.

Estimation of Blood Iron.—A simple and rapid method for the accurate estimation of blood iron with the use of 0.2 cc. of blood is described by Smirk. The method depends on a colorimetric comparison of the iron as ferric thiocyanate with an artificial color standard consisting of a mixture of cochineal, 4 cc.; methyl red, 3.2 cc., and hydrochloric acid, 4 cc., dissolved in an equal mixture of acetone and water. To the approximate depth of color required, a final adjustment of tint is made by adding drops of methyl red if the orange tint predominates, and cochineal solution if the red is too clear. The color is permanent, and indistinguishable from that of the thiocyanate.

Recovery from Insulin Hypoglycemia.—No significant difference was observed by Kermack et al. in the time taken to recover from insulin hypoglycemia following intravenous dihydroxyacetone administration as compared with dextrose. Methylglyoxal and sodium pyruvate fail to cause animals to recover from insulin hypoglycemia and appear to have a toxic action. Negative results were also obtained with sodium lactate, glycerin, sodium citrate and rhamnose.

Biochemistry of Aqueous Humor.—Duke-Elder asserts that from the biochemical point of view neither the normal nor the abnormal aqueous humor shows evidence of the existence of any special secretory mechanism in its elaboration, but appears to be rather a dialysate of the capillary blood.

Effect of Excessive Ultraviolet Irradiation.—Observations that were made by Leigh-Clare showed that provided the eyes were shielded, exposure of young growing rats to ultraviolet irradiation for periods up to thirty minutes daily was not found to have a deleterious effect on the growth and well being of the rats (although this dose was found to be fifteen times the adequate dose for male rats). It was also found that exposure for thirty minutes to the lamp had no more beneficial results than exposure for the shorter periods.

Antirachitic Value of Fresh Spinach.—The presence of vitamin D in small amounts in fresh spinach was demonstrated by Roscoe. His experiments do not afford any evidence in favor of the theory that vitamin D, after synthesis in the leaf, is rapidly removed.

Edinburgh Medical Journal

34: 193-252 (April) 1927

*Synthetic Thyroxine. D. M. Lyon and F. A. Redhead.—p. 194.
Mental Deficiency. R. D. Clarkson.—p. 200.
*Seroprophylaxis of Measles. W. T. Benson and J. D. H. Lawrie.—p. 216.
*Action of Ammonium Benzoate on Urine. J. M. Johnston.—p. 223.
Onset of Postencephalitic Parkinsonism. J. P. Steel.—p. 231.

Synthetic Thyroxine.—Last year, Harington and Barger succeeded in synthesizing a substance which corresponds in all particulars with thyroxine isolated from the normal gland. This material has been tested by Lyon and Redhead for physiologic activity on two myxedematous subjects. Striking changes followed the administration of the drug. The metabolic rate rose immediately and rapidly, declining after the drug was discontinued. The rise in the temperature and the pulse changes closely parallel the alterations in the basal metabolic rate. Reduction in weight took place in both subjects. Notable change in the blood pressure was not observed. Diuresis and diarrhea were caused after each injection in one case. The clinical improvement was striking.

Seroprophylaxis of Measles.—The experience of Benson and Lawrie with the serum prophylaxis of measles has been very satisfactory. Of twelve susceptible children exposed to infection with the measles virus, eleven escaped infection subsequent to passive immunization with convalescent measles serum, while one developed a highly modified form of the disease. The eleven children who escaped infection received their prophylactic injection of serum on, or before, the fourth day of exposure. The child who developed the extremely mild attack of measles did not receive the injection until the sixth day of exposure. The serum was injected intramuscularly. The dose was 10 cc. Of nine nonimmunized children, in whom the conditions of contact with measles were, if anything, less intimate than in the foregoing group, two developed typical measles after a period of incubation varying from ten to fourteen days.

Action of Ammonium Benzoate on Urine.—Clinically, Johnston found that ammonium benzoate produced or maintained an acid urine, and when the urine in *B. coli* cystitis was acid, more relief to symptoms was procured by alkalizing with sodium bicarbonate before administering the benzoate. Some alkaline cloudy urines rapidly became clear, with relief of symptoms, but in obstinate cases of chronic cystitis, especially in women, ammonium benzoate merely prepared the way for methenamine, the combination of these two drugs giving good results. In treating cystitis with ammonium benzoate, the first effect is the production of a moderate degree of diuresis, which is maintained, and this, no doubt, plays a part by flushing the urinary passages. That ammonium benzoate has an antiseptic action is doubtful, and the drug is certainly not to be relied on clinically when used alone. To ascribe an antiseptic power to it because of its acidifying properties is fallacious, as the drug cannot produce a urine sufficiently acid to prohibit the growth of organisms. Any effect must be due to the salts of unconjugated benzoic acid in the urine, a 5 to 8 per cent solution of which seemed capable of slightly retarding the growth of *B. coli*.

Lancet, London

1: 691-742 (April 2) 1927

Surgery of Spinal Cord and Membranes. D. Armour.—p. 691.
Anterior Subluxation of Atlas. W. A. Oppel.—p. 698.
Phlebitis and Thrombophlebitis of Lower Extremities and Superficial Veins of Lower Abdomen. W. Bain.—p. 701.
*Case of Rat-Bite Fever. T. L. Hardy and H. M. Savery.—p. 703.
*Misdiagnosis in Case of Acute Intestinal Obstruction. C. E. H. Anson.—p. 704.
*Relief of Migraine. H. C. Rook.—p. 705.

Rat Bite Fever.—The case recorded by Hardy and Savery was unusual in that at no time were there signs of recurrent inflammation in the wound, which remained healed and painless throughout, nor was there enlargement of the lymph glands.

Acute Intestinal Obstruction.—In Anson's case the symptoms present led to a diagnosis of carcinoma of the rectum and as obstructive symptoms increased, a colostomy was performed. A condition of diffuse carcinomatosis was found, with small nodules over the small intestines and colon and also in the mesentery. The patient died two months later. A necropsy was performed. The mass felt by rectum proved to be a secondary deposit situated between the rectum and the bladder. The primary growth was situated in the cecum, a typical adenocarcinoma with very well marked colloid degeneration. A huge mass of secondary carcinoma was also found beneath the left lobe of the liver.

Treatment of Migraine.—The treatment employed by Rook consisted of giving from 2 to 4 drachms (7.5 to 15 cc.) of a 50 per cent solution of magnesium sulphate one hour before rising, and following this, the patient was instructed to lie semiprone on the right side. At the end of the hour, a large tumblerful of hot water or hot weak tea is taken. This is most important, since if the salts are not evacuated within two or three hours, a feeling of intense depression is produced which may result in an attack. The day or half-day previous to taking the salts is a starvation day, but this should be done not more often than once a week. Certain articles of diet must be strictly limited. These are fats of all sorts, and in certain cases eggs; also chocolate, cocoa, coffee and alcohol.

Practitioner, London

118: 205-272 (April) 1927

Malignant Disease of Tonsil. W. Milligan.—p. 205.
Treatment of Wounds by Water-Bed. A. Eiselsberg.—p. 213.
Acute Intussusception in Infants. L. Rogers.—p. 219.
Marriage. N. Haire.—p. 227.
Research Problems in Diseases of Nervous System. G. Klionsky.—p. 235.
Disorders of Pregnancy and Vicious Circle. J. B. Hurry.—p. 239.
Bournemouth as Health Resort. A. D. Edwards.—p. 258.
Torquay as Health Resort. T. Dunlop.—p. 261.
Newquay as Health Resort. A. G. P. Hardwick.—p. 265.

Quarterly Journal of Medicine, London

20: 219-352 (April) 1927

*Clinical Classification of Premature Ventricular Beats. G. Bourne.—p. 219.
*Circulation Rate in Man by Ethyl Iodide Method. H. W. Davies and A. R. Gilchrist.—p. 245.
*Fractional Analysis of Gastric Contents. R. J. Duthie.—p. 265.
*Gastric Function in Chronic Arthritis and Fibrositis. S. Miller and F. B. Smith.—p. 271.
*Effect of Mineral Acid on Acid-Base Regulation in Health and in Nephritis. G. C. Linder.—p. 285.
*Heredity in Simple Goiter. W. R. Brain.—p. 303.
*Radium and Blood Cholesterol. C. E. Brunton.—p. 321.
Clinical Duration of Saccular Aortic Aneurysm in British-Born Subjects. G. H. Colt.—p. 331.
Effect of Administration of Parathyroid on Serum Calcium. C. P. Stewart and G. H. Percival.—p. 349.

Enumerating Premature Ventricular Beats.—A method is described by Bourne for enumerating accurately, over long periods of time, the number of normal and of premature ventricular beats. The effects of exercise, posture, amyl nitrite and atropine on the number of premature beats, and simultaneously on the heart rate, have been studied in a series of twenty-eight cases, in which such premature beats were of reasonably frequent occurrence. The curves taken from thirteen of these cases suggest reentry rather than parasystole as being a causative mechanism.

Circulation Rate in Man.—The data in 118 determinations on eighteen subjects are presented by Davies and Gilchrist. The ethyl iodide method of estimating circulation rate is said to possess many advantages over methods hitherto in use. Determinations can be carried out in a few minutes and do not produce discomfort or disturbance to the subject. The results are reasonably consistent, provided constant conditions are maintained and errors of technic are avoided. Excessive amounts of ethyl iodide appear to have a depressant effect on the circulation rate in certain individuals. For this reason, repeated estimations over too short a period are liable to be fallacious. In the present series of observations, there is no relationship between the circulation rate and any other physical measurements in different individuals. Considerable variations in circulation rate may be associated with varying conditions of metabolism, activity, environmental temperature, posture and emotional excitement. For this reason, the conditions under which observations are made on any given subject must be carefully standardized that comparable results may be maintained.

Fractional Analysis of Gastric Contents.—A method of obtaining simultaneously samples of gastric contents at two points is described by Duthie, and the variations of the free acidity and total chlorides are compared in three cases. Differences in the free acid and total chlorides were found in the upper and lower regions of the stomach during the digestive cycle in three cases. Duodenal regurgitation was

shown to affect the gastric contents chiefly in the lower part of the stomach.

Gastric Function in Arthritis.—Miller and Smith assert that the association of achlorhydria and hypochlorhydria with chronic arthritis is not so marked as to justify the conclusion that it is a primary factor in the etiology of the disease. In general, the frequency of abnormal gastric acidity approaches that found in a wide group of other diseases; it may be the result of depression of function due to debility and asthenia. There is evidence that achlorhydria in chronic arthitis allows more ready multiplication in the bowel of streptococci, and may be, therefore, an accessory factor in the etiology of the disease.

Effect of Mineral Acid on Acid-Base Regulation.—Dilute hydrochloric acid, in amounts corresponding to from 500 to 1,000 cc. of tenth-normal acid a day, was given by Linder to four normal persons and to six patients with nephritis for periods of two to four days. In the control cases a quantity of fixed base was available for excretion with the acid. This store was exhausted in two or three days, and its place was taken by ammonia, which was excreted in increasing amounts. The extra base was derived from cellular and extracellular water. In one mild case of chronic nephritis, similar results were obtained. The patients with chronic hydremic nephritis without gross edema showed an adequate response in ammonia formation, but the extra excretion of fixed base was lacking. The azotemic patients showed diminished power to form extra ammonia. This defect became greater as renal function failed. In compensation there was a much greater excretion of fixed base, which in one case was derived entirely from cellular water. The changes in the serum consisted of increases in the chloride and decreases in bicarbonate and p_H. The total base usually decreased slightly. In the patients these changes were more extensive, giving evidence of failure to adjust the acid-base balance with the customary delicacy. In the two patients whose renal function was greatly impaired, severe acidosis was produced.

Heredity in Simple Goiter.—A series of six families is reported on by Brain, including among them twenty-six cases of simple goiter. In two of these families cases occurred in four successive generations. A second series of five families is reported, containing twelve cases of simple goiter associated with congenital deaf-mutism. Evidence is brought forward in support of the view that hereditary predisposition is a factor in the etiology of simple goiter in some cases. The relation of predisposition and environment in such cases is discussed. An explanation of the differences between the sexes in respect to the incidence and transmission of goiter is suggested. The inheritance of goiter is considered in relation to mendelian laws. It is concluded that simple goiter may be the manifestation of more than one abnormal hereditary factor, two of which can be distinguished by their behavior in transmission.

Radium and Blood Cholesterol.—Brunton estimated the total cholesterol content of the blood and plasma of thirteen patients suffering from cancer. The average concentration was 149 mg. per hundred cubic centimeters. In the oxalated plasmas of forty-four patients, the average concentration was 169 mg. per hundred cubic centimeters. After operations for nonmalignant conditions, after treatment for malignant disease by diathermy, and after its treatment by radon, the plasma cholesterol may either increase or decrease. In thirty patients examined before and after treatment by radon, no relation was found between the alteration in cholesterol concentration, and either the dose of radon or the time of its action within the limit of seventy-two hours.

Tubercle, London

8: 301-352 (April) 1927

*Experiment in Occupational Therapy. J. B. McDougall.—p. 301.
*Hemolytic Streptococci as Secondary Infectors in Pulmonary Tuberculosis. W. M. Cumming.—p. 308.
*Significance of Pulse Rate in Phthisis. J. R. Earp.—p. 314.
Binucleate Cells and Giant Cells in Tissue Cultures and Similarity of Latter to Giant Cells of Tuberculous Lesions. W. H. Lewis.—p. 317.

Experiment in Occupational Therapy.—McDougall describes a plan in effect at Wormly whereby an opportunity is given ex-patients to work for a livelihood under open air conditions and under medical supervision. Social activities first provided the funds. Now there is a newspaper, a store, wool farming and a pig farm to provide funds for the maintenance of this work.

Hemolytic Streptococci in Pulmonary Tuberculosis.—Of 119 patients suffering from pulmonary tuberculosis, twenty-two have been shown by Cumming to have hemolytic streptococci, indistinguishable from the ordinary hemolytic streptococci of surgical practice in the sputum. The occurrence of these organisms in the sputum has been shown to be related to a definite but limited extent with the incidence of hemoptysis and hectic fever and with the mortality. Possible lines of autogenous streptococcal vaccine therapy are discussed.

Significance of Pulse Rate in Phthisis.—Earp points out that whereas the minimum pulse rate (during the day) in tuberculosis is of no significance, the maximum pulse rate is of considerable significance. The range of pulse rate is even more significant than the maximum pulse rate.

Acta Scholae Medicinalis, Kioto, Japan

9: 1-124, 1926

Precision Complement Fixation Method and Resultant Findings. R. Torikata.—p. 1.
Transmicroscopic Structure of Tissues: Disposition of Inorganic Substance in Bones and Dentine by Means of Roentgen Ray. S. Funaoka.—p. 37.
Id.: II. Disposition of Microcrystalls in Enamel of Teeth. S. Funaoka.—p. 41.
Caliber of Nerve Fibers of Anterior Spinal Roots of Man. Y. Matsui.—p. 45.
Ganglion Cells in Ganglion Stillatum of Mammals. Y. Matsui.—p. 51.
Mode of Bile Outflow: III. After Removal of Gallbladder. K. Nakashima.—p. 59.
Solitary Complement Fixation Reaction: I. Ability of Different Substances to Combine in Solitary Condition with Complement. Y. Imamaki.—p. 69.
Id.: II. Relation of Heating of Tested Material to Its Ability to Fix in Solitary Condition a Complement. Y. Imamaki.—p. 91.
Id.: III. Relation of Ether Extraction of Substances to Their Ability to Fix in Solitary Condition Their Complement. Y. Imamaki.—p. 103.

9: 125-265, 1926

Solitary Complement Fixation Reaction: IV. Spontaneous Autocomplementosis, Homocomplementosis and Heterocomplementosis. Y. Imamaki.—p. 125.
Id.: V. Behavior of Ether Extraction and of Healing of Antigens of Autocomplementosis, Homocomplementosis and Heterocomplementosis. Y. Imamaki.—p. 151.
Uterine Muscle of Mammals. M. Shinagawa.—p. 177.
General Formula of Heat Inactivation of Antibodies. T. Nishi.—p. 209.
Adsorption of Dyes in Gallbladder of Rabbit. K. Nakashima.—p. 225.
Cataphoresis of Blood Corpuscles, Spermatozoa, Yeast and Eggs of Parasites. K. Tomita.—p. 237.

Japan Medical World, Tokyo

7: 1-30 (Jan. 15) 1927

*Heredity and Biochemical Structure of Human Blood. T. Furuhata, K. Ichida and T. Kishi.—p. 1.
Wild Rabbit Disease and Tularemia Serologically Considered. H. Ohara.—p. 10.
Résumé of Works on Ascaris Recently Published from Parasitology Laboratory, Keio University Medical College. M. Koidzumi.—p. 12.
Prevalence of Tuberculosis and Antituberculosis Campaign in Japan. R. Takano.—p. 16.

Heredity of Blood Groups.—Furuhata, Ichida and Kishi classify human blood into three homozygotes of $\frac{ab}{ab}$, $\frac{Ab}{Ab}$, $\frac{aB}{aB}$ and three heterozygotes of $\frac{Ab}{ab}$, $\frac{aB}{ab}$, $\frac{Ab}{aB}$. The biochemical structures of human blood (iso-agglutinogen and iso-agglutinins) are said to be inherited by Mendel's law. A combination of one homozygote with another homozygote produces one kind of offspring. A combination of the same kind of homozygotes produces the same and pure type as parents. A combination of different types of homozygotes produces a hybrid. A combination of a homozygote and a heterozygote produces two types of offspring in the same proportions. In combination of heterozygotes of the same types, the grandparents and parents produce the offspring in the proportions of 1:2:1. Four types of children in the same proportion are born from a combination of heterozygotes of different types. Among 1,890 persons, representing 399 families, five cases were found that did not conform to the authors' theory.

Bruxelles-Médical, Brussels

7: 483-515 (Feb. 13) 1927

*Classification and Treatment of Tuberculids. J. Schaumann.—p. 483.
*Syphilis and Multiple Sclerosis. M. Molhant.—p. 498.

Classification and Treatment of Tuberculids.—Schaumann's paper is devoted to the study of tuberculids of tuberculous origin, and to that of paratuberculous lesions of the skin, such as lupus erythematosus, malignant lymphogranulomatosis, lupus pernio and multiple benign sacroids. Various methods of treatment are discussed. Finsen baths are useful. Gradually increasing doses of tuberculin injected into or beneath the skin are of great benefit. Tuberculin combined with neoarsphenamine appears to be the preferable therapeutic method. Good results were cited from intravenous injections of a gold preparation. Ten injections of graduated doses, from 0.01 to 0.1 Gm., are given, one a week. Of the author's twenty patients with lupus erythematosus thus treated, nine were cured, and ten improved. In one case, the treatment failed. Cure of a case of lupus pernio with large doses of sodium cacodylate was recently recorded.

Analogy Between Syphilis and Multiple Sclerosis.—Molhant emphasizes the resemblance between syphilis of the spinal cord and multiple sclerosis. It is evident, he says, in the clinical picture, in the serologic reaction and in the course of the two diseases. The efficacy of arsenical treatment in multiple sclerosis reenforces the analogy.

Bulletin de l'Académie de Médecine, Paris

97: 467-498 (April 12) 1927. Partial Index

Pathogenesis and Pathologic Physiology of Herpes Zoster. G. Marinesco and S. Draganesco.—p. 473.

97: 499-516 (April 19) 1927

*Tuberculosis and Gas Poisoning During the War. C. Achard.—p. 502.
Mendelian Heredity of Tumors in Man. F. Miche.—p. 510.
Conjunctival Jaundice in Appendicitis. C. P. Caplesco.—p. 513.

Tuberculosis as Remote Sequela of Gas Poisoning During the War.—Achard's conclusions are based on personal clinical and roentgenologic observations and on those of other authors. Tuberculosis occurring recently in persons affected with gas poisoning during the war presents a chronic fibrous form. It follows respiratory disturbances appearing at short intervals. Only a history of repeated bronchopulmonary lesions justifies incrimination of gas poisoning in tuberculosis of war veterans.

97: 517-544 (April 26) 1927

Reform of Medical Education. M. Labbé.—p. 522.
New Classification of Mineral Waters. A. Chassevant and M. Valls.—p. 530.
Synthalin in Treatment of Diabetes. H. Chabanier and M. Lebert.—p. 535.
Intracardiac Injections in Treatment of Pulmonary Diseases. Cherechewski et al.—p. 540.

Comptes Rendus de la Société de Biologie, Paris

96: 305-368 (Feb. 11) 1927. Partial Index

*The Amount of Oxalate in Normal Cerebrospinal Fluid. C. O. Guillaumin.—p. 316.
*Oxalate of the Blood in Normal and Pathologic Conditions. C. O. Guillaumin.—p. 317.
*Cystinuria and Tuberculosis. R. Monceaux.—p. 323.
*Antigen Property of Bacteriophages. E. Wollman and E. Wollman.—p. 332.
*Bacteriology of Typhus in Man. B. Fejgin et al.—p. 341.
Influence of Fats on Gastric Digestion. W. Filinski and W. Markert.—p. 344.
Action of Vegetable Juices on Gastric Secretion. W. Orlowski.—p. 352.
*Serologic Study of the Bacillus of Whooping Cough. M. Kristensen.—p. 355.
*The p_H of the Blood During Glycolysis. A. Roche and J. Roche.—p. 359.
*Glycolysis Speed and the p_H. A. Roche and J. Roche.—p. 361.
*The Amount of Blood Platelets in Cancer. E. Rud.—p. 364.
*Blood Coagulation in Cancer. E. Rud.—p. 366.

Calcium Oxalate in the Cerebrospinal Fluid and in the Blood.—Guillaumin asserts that the exact amount of calcium oxalate in normal cerebrospinal fluid and in blood serum cannot be determined with the present methods of measurement. Obviously, it is less than 0.002 Gm. per liter. In pathologic conditions, the oxalate content of the blood may range between 0.002 and 0.015 Gm., never exceeding 0.04 Gm. per liter. Oxalemia was found in obesity, diabetes, gout and uremia.

Cystinuria in Tuberculosis.—Defective sulphur metabolism is one of the nutritional disturbances occurring in tuberculosis. The incompletely oxidized sulphur appears in the urine mostly in the form of cystine. The latter was found in the urine of over 40 per cent of tuberculous patients. The cystinuria apparently results from an insufficient amino-acidolytic functioning of the liver. On normal functioning, the cystine is transformed into taurin.

Antigen Property of Bacteriophages.—Wollman and Wollman experimented on antidysenteric and antityphoid bacteriophages that have been in contact only with corresponding bacilli. Serum prepared with the antityphoid bacteriophage was found to neutralize not only the lytic action of the bacteriophage on the typhoid and the Shiga bacilli, but also the action of the antidysenteric bacteriophage on the two bacilli. Moreover, while the antityphoid bacteriophage is without action on the bacillus of dysentery, serum prepared with this bacteriophage neutralizes the lytic action of the antidysenteric bacteriophage on both bacilli. The antigenic action of bacteriophages on micro-organisms of the same group, does not depend on their lytic action.

Bacteriology of Typhus in Man.—Fejgin, Kaczynski and Szwojnicka made 143 examinations of the blood, urine and stools of typhus patients. Several strains of the X group were isolated. The results confirm those of other authors.

Serologic Researches on the Bacillus of Whooping Cough.—Kristensen's study was made on cultures of bacillus present in the mucus and in the blood of patients with whooping cough. The patients lived in various districts of Copenhagen. Each culture served for complement fixation reaction in each of the specimens of blood. Thus a total of 100 experiments were made. All the reactions were identical. The author notes that the results disagree with those of Krumwiede, Mishulow and Oldenbusch, who found two different serologic types of the whooping cough bacillus.

Variations in the p_H of the Blood in the Course of Glycolysis.—In Roche and Roche's experience, reduction of the p_H of the blood paralleled that of the glucose. The greater and more rapid the glycolysis, the more did the p_H decrease. This explains the spontaneous disappearance of carbonic acid from the blood, observed by Evans in vitro. Evidently, in researches on glycolysis, variations in the p_H of the blood, capable of causing coagulation, should be avoided. For this purpose, a 0.3 per cent solution of sodium citrate or defibrination is effectual.

The Amount of Blood Platelets in Patients with Cancer.—Rud noted an increased amount of blood platelets in forty women with cancer of the uterine cervix. The number of the platelets exceeded the normal by 25 per cent; the increase corresponding to the gravity of the case. In cases with a complicating anemia, the excess of platelets reached about 50 per cent. Coagulation in vitro of the blood of all the patients was considerably accelerated. The phenomenon may be due to the excess of platelets or of fibrin in the blood.

Journal of Médecine de Bordeaux et du Sud-Ouest

104: 91-132 (Feb. 10) 1927

*Eye Disturbances of Dental Origin. C. Fromaget.—p. 91.
General Paralysis in the Elderly. G. Auriat and J. Sabelle.—p. 99.
Mental Confusion Following Vaccination. C. Perrens.—p. 104.
Axial Torsion of a Fibromatous Uterus. A Chauvenet.—p. 106.

Eye Disturbances of Dental Origin.—Fromaget points out the double mechanism by which the eye may become involved in the course of dental infection. Circumscribed infection of a tooth may irritate the ends of the trigeminal and sympathetic nerves, causing vasodilatation of the eye vessels. Thus reflex disturbances of the eye occur. Or bacilli may be carried by the blood stream from the dental focus to the eye, where they form a focus of infection. According to Rosenow, the infection is induced chiefly by *Streptococcus viridans*, which seems to have an elective affinity for the eye. Many transient visual disturbances are of the reflex type. They disappear as soon as the infectious process in the tooth subsides. In

certain cases, the sinuses play an intermediary rôle between the dental infection and the ocular lesion. Search for the pathogenic micro-organism should be made in the blood, the periapical foci, and, especially, in the root-canals. The sinuses, as well as the dental and periapical foci, should be examined with the roentgen ray.

Lyon Chirurgical

24: 1-128 (Jan.-Feb.) 1927

Spontaneous Gangrene and Suprarenalectomy. W. A. Oppel.—p. 1.
Lipiodol in Urethrography in Cases of Calculus. A. Cassuto.—p. 25.
*Neuroramisectomy for Gastric Crises in Tabes. J. Verbrugge and L. van Bogaert.—p. 32.
Chondroma of Cervical Vertebrae. M. Desjacques.—p. 40.
New Type of Gastroduodenal Anastomosis After Gastrectomy. R. Leriche. —p. 44.

Severing Rami Communicantes for Gastric Crises in Tabes.—In one of Verbrugge and van Bogaert's cases of tabes, the right intercostal nerves and the corresponding rami communicantes were severed between the seventh and the tenth dorsal vertebrae. The gastric phenomena and the girdle pains subsided immediately. The same operation previously done on the left side had been without effect. The patient died shortly after from cachexia. In another tabetic patient, severing the right intercostal nerves and the rami communicantes between the fifth and the eleventh dorsal vertebrae brought about disappearance of gastric crises. There has not been a recurrence for nine months (to date). The operative technic is given.

Paris Médical

61: 389-404 (April 23) 1927

*Rôle of Vitamins and Insulin in Nutrition. C. Funk.—p. 389.
Medical Treatment of Cancer. A. Lumière.—p. 392.
Pneumothorax and Radiography. R. Hervé.—p. 398.
Note on Beriberi. M. Léger.—p. 402.

Rôle of Vitamins and of Insulin in Nutrition.—Substance A (vitamin A), Funk says, represents the pancreatic hormone. Substance B or anti-insulin exerts an action antagonistic to that of insulin. Substance C or co-insulin is indispensable for activation of substance A. Unlike insulin, substance A is without effect in healthy persons, while in diabetics it reduces the amount of the blood sugar. In normal conditions, the content of substance C in the blood is proportional to that of substance A. Introduction of substance A into the organism causes a surplus which cannot be activated, and consequently remains inert. In the blood of diabetic persons, substance A is deficient, while the amount of substance C is greatly increased. The fact that substance A reduces the blood sugar in diabetics is thus explained. Substance A does not cause hydremia or hypoglycemic shock which are sometimes observed with insulin. In rabbits substance B induced hyperglycemia accompanied by pancreatic disturbances. The animals lost in weight; they developed hydremia and grave anemia. Substances A and B are present in the pancreas and in the liver; they are found in almost all alimentary products. These facts may throw light on the etiology of diabetes.

61: 405-420 (April 30) 1927

Scepticism in Therapeutics. P. Savy.—p. 405.
*Cecal Spasm in Appendicitis. A. Fraikin.—p. 414.
*Pharyngeal Disturbances Associated with Biliary Diseases. G. Parturier and Vallerix.—p. 415.

Spasm of the Cecum in Chronic Appendicitis.—Fraikin points out the presence of cecal spasm in chronic appendicitis. The spasm can be seen in the roentgenogram. It is confined to the cecal fundus and the cecal border where the appendix is inserted. It is visible six or seven hours after a barium sulphate meal. Sometimes the spasm appears only on palpation of the cecum. The spasmodic reflex is followed by expulsion of the barium into the ascending colon. Clinically, the spasm is revealed by colic. It may be of diagnostic value in chronic appendicitis.

Pharyngeal Disturbances Associated with Biliary Diseases.—Parturier and Vallerix explain the origin of rhinopharyngeal lesions associated with biliary diseases. Rhinopharyngeal disturbances may precede or succeed those of the liver or biliary tract. Sometimes lesions develop simultaneously and independently in the liver and in the nasopharyngeal tract. Colloidoclastic shock may be a common factor in these diseases.

Presse Médicale, Paris

35: 481-496 (April 16) 1927

*Modern Theories of Vasomotion. R. Leriche and R. Fontaine.—p. 481.
Dietetic Value of Vegetables. W. Orlowski.—p. 482.

Critique of Modern Theories of Vasomotor Activity, Based on Surgical Facts.—In Leriche and Fontaine's experience, severing of all vasomotor rami in an extremity has never caused vasomotor paralysis or phenomena of vasoconstriction. The reaction to cold and to heat was conserved. In 300 operations in man and animals, severing of sympathetic nerves induced a transient vasodilatation in the opposite extremity as well as in the involved extremity; frequently in all four extremities. Severing of certain sensory nerves caused analogous phenomena of vasodilatation. Severing of mixed nerves, such as the sciatic, did not abolish vasomotor activity. Phenomena of hyperemia were observed in the involved parts a few months after the operation. Three months after extensive destruction of the spinal cord, vasomotor reactions in the lower extremities were still present. The facts contradict the classic theory according to which efferent nerves convey vasoconstrictor or vasodilator impulses from the spinal cord to the periphery. The theory that vasomotor centers are present in the arterial wall agrees better with reality, the authors say. Sensory fibers join the intra-arterial centers to the ganglionic and medullary centers.

35: 497-512 (April 20) 1927

*Surgery for Pain. R. Leriche.—p. 497.
Electrocardiography in Coronary Obliteration. A. Clerc.—p. 499.
Fracture of Astragalus with Disarticulation of Posterior Fragment. P. Feutelais.—p. 502.

Surgery for Relieving Pain.—Leriche discusses the anatomic and physiologic factors of pain. He concludes that it is frequently difficult to establish the exact location of pain. Hence, removal of ganglions may be without effect; furthermore, it is not yet known how detrimental the operation is. Leriche warns against posterior radicotomy. Relief of pain is not always attained. He is against cordotomy, although the operation was introduced into France by himself. Neurotomy requires certain precautions. It should be borne in mind that anastomosis of the superior cervical ganglion with vagal fibers is possible. Overlooking of the fact may result in paralysis of the palate and of the vocal cords. In interventions on the lumbar sympathetic, the lymphatics should be respected; while in periarterial sympathectomy care must be taken not to injure the arteries, to avert thrombosis. The chief cause of recurrence of pain after neurotomy is the formation of a neuroma on the nerve scar. The neuroma must be excised at a supplementary operation. A method for preventing neurogliomatous proliferation in the nerve-stumps is needed.

35: 513-528 (April 23) 1927

Thirty-Two Cases of Bronchial Spirochetosis. J. Gaté and M. Billa.—p. 513.

35: 529-544 (April 27) 1927

*New Cause of Carbon Monoxide Poisoning. F. Heim de Balsac et al. —p. 529.
Curative Serotherapy in Tetanus. R. Archambaud and J. Friedmann. —p. 530.
Results of B. C. G. Vaccination Against Tuberculosis. G. Poix.—p. 531.

35: 545-560 (April 30) 1927

Whipple's Method in Treatment of Grave Anemias. W. Aitoff and G. Loewy.—p. 545.
Initial Symptoms in Parkinson's Disease. E. Juster.—p. 548.

New Cause of Occupational Carbon Monoxide Poisoning.—Heim de Balsac, Agasse-Lafont and Feil call attention to a form of chronic carbon monoxide poisoning from what is known as "poor gas." This gas is tending to replace illuminating gas in factories, also gasoline in automobile traction. It contains from 25 to 27 per cent of carbon monoxide. The lighting and heating power of the gas is below that of coal gas; but its cost is only one twelfth as much. The manufacturing of the gas is without danger. Poisoning is due to escape through crevices in the receptacle.

Progrès Médical, Paris

54: 234-264 (Feb. 12) 1927

Exotic Psychoneurosis. H. Codet.—p. 241.
*Clinical Study of Substance A of Insulin. M. Landsberg.—p. 242.
*Note on Substance A. C. Funk.—p. 245.
Mental and Nervous Derangement Following Cerebral Thrombosis. A. Forel.—p. 245.

Clinical Study of Substance A Isolated from Insulin.—Substance A, isolated by Funk from insulin, was used by Landsberg in diabetic and nondiabetic persons. A dose of 0.012 Gm. of the substance, corresponding to 20 units of insulin, was injected subcutaneously in the fasting patient. In diabetic patients the blood sugar was reduced by from 0.041 to 0.109 Gm., an hour and a half after the injection. Some of these patients were given insulin; the reduction of the blood sugar was scarcely larger than that from substance A. Administered by the mouth, the latter proved to be without effect. In nondiabetic persons, substance A did not decrease the blood sugar appreciably. Shock did not occur in two cases of considerable hypoglycemia caused by substance A. It is probable that the substance in insulin which induces shock is not the same as that which induces hypoglycemia.

Use of Substance A of Insulin in Diabetic Patients with Cardiac Lesions.—Funk states that isolated substance A may not be of much therapeutic importance in diabetes, until it becomes possible to isolate also the activating substance C. Nevertheless, in diabetic patients with cardiac lesions, who do not tolerate insulin, substance A, which is chemically pure and is atoxic, can be advantageously employed.

Revue Française de Gynécologie et d'Obstét., Paris

22: 85-132 (Feb.) 1927

*Magnesium Sulphate in Treatment of Eclampsia. J. L. Wodon.—p. 85.
Chronic Nephritis and Pregnancy. R. Beckers.—p. 92.

Magnesium Sulphate in Treatment of Eclampsia.—Wodon asserts that magnesium sulphate may advantageously replace hypnotics in treatment of eclamptic convulsions. A dose of 3.5 or 4 Gm. of magnesium sulphate, in a 10 to 50 per cent solution, is used for one intramuscular injection. The injection may be repeated after an hour. The total number of injections is determined by the gravity of the case. The convulsions usually subside after the first injection. Magnesium sulphate does not affect the contractility of the uterine muscle, the pulse or the blood pressure. It possesses a diuretic action. The favorable action on the comatose condition is explained by reduction of the cerebral edema present in eclampsia. The treatment is without effect on eclamptic convulsions with uremia. The action of magnesium sulphate is explained by an ion mechanism. An ion of magnesium sulphate is capable of replacing an ion of calcium. Administration of the former results in liberation of calcium in the blood, and consequently in subsidence of convulsions caused by hypocalcemia.

Anales de la Facultad de Medicina, Lima

9: 1-166, 1926. Partial Index

Wagner and Jauregg's Treatment of General Paralysis. P. P. Figueroa.—p. 1.
Roentgen-Ray Diagnosis of Fracture of the Clavicle. F. Quesada.—p. 65.
*Study of Bartonella Muris. T. Battistini and P. Weiss.—p. 71.
*Vaccination Therapy in Carrion's Disease. O. Hercelles.—p. 94.
Significance of Freud's Work. H. F. Delgado.—p. 105.

Bartonella Muris in Lima Rats.—Battistini and Weiss examined twelve rats for *Bartonella muris*. In five animals it was found in the circulating blood and in smears of splenic pulp. In the blood it was detected after a ten minutes' search. The presence of this micro-organism in animals without any apparent sign of anemia and its location in the cells of the reticulo-endothelial system speaks for its parasitic nature. The blood syndrome accompanying bartonellemia in rats is similar to that observed in verruga peruana. There are morphologic differences between *Bartonella muris* and *Bartonella bacilliformis*. The results of transference experiments were negative in monkeys, guinea-pigs, both normal and splenectomized, and white rats.

Vaccine Therapy in Severe Carrion's Disease.—From several severe cases of Carrion's disease, Hercelles secured blood cultures, which he used to prepare a vaccine. This vaccine was tried in a number of cases, and the patients recovered without developing warts. An inoculation of the cultures in a monkey caused chills and rise of temperature. Intratesticular injection in a rabbit was not followed by significant change.

Anales del Hosp. de la Sta. Cruz y S. Pablo, Barcelona

1: 77-128 (March 15) 1927. Partial Index

*Strawberry Gallbladder. E. Ribas Ribas.—p. 77.
Surgical Treatment of Fractures of Extremities. L. Bosch Avilés.—p. 81.

Study of the Strawberry Gallbladder.—Among 300 cases of gallstones in which he operated, Ribas found fourteen typical "strawberry" gallbladders. In all the preoperative diagnosis had been cholecystitis with stones; but in only two were stones found and they were very small. Inflammatory processes, also, were present in only two cases. All the patients were young women. In seven cases histologic examination brought to light an accumulation of lipoid or cholesteroid in the epithelial cells. It seems hard to explain the attacks of pain in such gallbladders with no gross lesions and trifling microscopic changes. Perhaps the cause lies in the pressure exerted on the nerve by the accumulated cholesterol.

Archivos Lat.-Amer. de Pediatría, Buenos Aires

21: 85-163 (Feb.) 1927

Ultraviolet Rays in Treatment of Tuberculosis. F. W. Schlutz.—p. 85.
*Acute Otitis and Meningitis. L. Morquio.—p. 94.
Multiple Subcutaneous Tumors in an Infant. F. Pozzo and A. E. Bianchi.—p. 104.
*Rupia and Late Congenital Syphilis. J. C. Navarro and E. A. Travella.—p. 113.
Basal Metabolism in Obesity of Puberty. M. Steingart and F. Bazán.—p. 124.
Mental Type of Chlorosis. J. Damianovich.—p. 132.
Mongolian Idiocy and Purpura. W. Piaggio Garzón.—p. 143.
Tuberculosis of the Glands and Lungs in an Infant. C. Pelfort.—p. 155.
Vacciniform Hidroa. R. Capurro.—p. 159.

Meningitis Following Scarlet Fever.—In a boy, aged 7, after a mild attack of scarlet fever, an ear complication developed and finally a streptococcic meningitis. The patient recovered after treatment with streptococcus scarlet fever toxin.

Rupia in a Case of Late Congenital Syphilis.—Navarro and Travella's patient was a girl, aged 10, who presented various stigmas. Several extensive and rather deep ulcers had developed. Since antisyphilitic treatment did not prove effective, surgery was cautiously used to remove the necrosed tissues. The result was most satisfactory. The enlargement of the liver and spleen has not altered. The Wassermann reaction is still strongly positive.

Archivos de Medicina Cirugía y Espec., Madrid

26: 493-520 (April 16) 1927

*Disease and Death of Don Carlos. J. Sanchis Banús.—p. 493.
Iodine in Hyperthyroidism. E. Carrasco Cadenas.—p. 512.

Disease and Death of Philip II's Son.—Historians have often discussed the circumstances surrounding the death of Don Carlos, heir to the Spanish crown. Sanchis Banús studied critically the fragmentary data available. According to him, Carlos was descended on both sides from a catatonic schizophrenic great grandmother, and had for a grandfather a pathetic idealistic schizoid, and for father a "cold despot." He suffered, in his turn, from paranoid schizophrenia. His death came naturally from the same cause. This agrees with the clinical picture; there is little in favor of poisoning. The first to suggest the latter hypothesis was Watson, the English ambassador at Madrid at the time. "History becomes at last a branch of biology."

Clínica y Laboratorio, Zaragoza

9: 253-340 (April) 1927

*Vaccine Against Rabies. J. Ferrán Clua.—p. 253.
Cholecystography. J. M. Soldevilla.—p. 270.
Tuberculous Hemoptosis. J. Gil Chóliz.—p. 277.

Vaccine Against Rabies.—Ferrán describes fully his vaccine against rabies. Over 35,000 persons bitten by dogs have already been vaccinated; the death rate varies between two and four per thousand, including all causes. The method

and four per thousand, including all causes. The method reduces the time necessary for vaccination to five days, and in an emergency to three. Treatment can be applied even at home by any physician who can handle a hypodermic syringe. It is available at 100 stations in Spain.

Revista Médica Latino-Americana, Buenos Aires

12: 773-947 (March) 1927

*Acute Manifestations of Leprosy. F. de P. Barrera and A. Peña Chavarria.—p. 773.
*Compulsory Vitaminization of Infant Foods. J. A. Collazo and A. E. Goslino.—pp. 806 and 811.
Recurrent Dislocation of the Patella. C. Lugones.—p. 815.
Tuberculosis of the Eyes. J. L. Pavia.—p. 830.
A Case of Hemolytic Anemia. L. de Marval and M. Benaros.—p. 869.
Brain Diseases. A. S. Marotta.—p. 875.

Acute Manifestations of Leprosy.—Among the 6,500 lepers isolated in government leprosariums in Colombia, Barrera and Peña have seen, as a regular phenomenon, the acute attacks on the chronic soil of leprosy which McDonald calls "leprous fever." These flare-ups may change the tubercular type into the maculo-anesthetic, or vice versa. On recovering, the patient may show remarkable improvement; however, if the attacks are very severe and close together, the resultant weakening may darken the prognosis. These acute attacks are a defense reaction. Between the inflammatory nodule and the chronic tubercle, there are anatomic differences. During the attacks, the *Bacillus leprae* exhibits signs of degeneration. From a preventive standpoint, it must be kept in mind that the patients disseminate bacilli in much greater quantities during such flare-ups. No treatment has proved very successful against this "fever." As soon as the attack subsides, the chaulmoogra oil treatment must be renewed.

Compulsory Vitaminization of Infant Food.—The lack of vitamin B in infant foods—milk, flour, juices—compels, Collazo and Goslino assert, the introduction of vitaminizing methods. They suggest the addition of autolized brewers' yeast. The methods used in concentration must be exclusively physical. The natural vitamin content is not enough. This procedure does not change any of the fundamental characters of the products. Its efficiency was proved on pigeons. As soon as the meaning of the word "vitamin" is established and methods for determining the presence of the vitamin are agreed upon, the sale of unvitaminized infant foods should be forbidden.

Revista Medico-Cirurgica do Brasil, Rio de Janeiro

35: 75-112 (March) 1927

*Tuberculin Treatment of Leprosy. S. de Novaes e Silva.—p. 83.

Tuberculin in the Treatment of Leprosy.—Novaes tried the effect of tuberculin in three lepers, one of each type. The skin and anesthestic cases reacted well, but the latter more slowly. The therapeutic result was almost nil in the nervous case. Tuberculin does not cause violent reactions if its use is carefully controlled. It stops the nasal discharge, thus decreasing the danger of contagion.

Archiv für Kinderheilkunde, Stuttgart

80: 241-320 (March 25) 1927

*Cylindruria from Acidified Milk. F. von Bernuth and J. Duken.—p. 241.
*Infantile Paralysis of Vegetative Nervous System. P. Selter.—p. 244.
Epidemic Parotitis. O. Wiese.—p. 253.
Langer's Tuberculosis Vaccine. K. Ossoinig.—p. 259.
*Avitaminosis, Blood Platelets and Erythrocytes. S. Sherif and H. Baum.—p. 269.
Scarlet Fever. H. Buschmann.—p. 280.
The Dick and Schick Tests. W. Schultz.—p. 287.

Cylindruria from Acidified Milk.—Bernuth and Duken, experimenting on cats, found that administration of milk mixed with hydrochloric acid caused only a moderate injury to the kidneys. In about 60 per cent of the infants fed with the mixture, granulated casts appear in the urine. Albumin is practically absent.

Infantile Paralysis of the Vegetative Nervous System.—Selter claims priority in the description of acrodynia, which he published in 1903 under the name "trophodermatoneurosis." He now believes that it is an infectious disease localized in the centers of the vegetative nervous system and suggests the name mentioned in the title.

Avitaminosis, Blood Platelets and Erythrocytes.—Sherif and Baum observed a pronounced thrombopenia on diets lacking in (antixerophthalmic) vitamin A. Absence of the antirachitic factor causes thrombopenia in all animals and in 50 per cent of children subjected to such diets. Lack of vitamin B or C did not influence the number of blood platelets.

Archiv für klinische Chirurgie, Berlin

144: 245-488 (March 3) 1927

Genesis of Postoperative Jejunal Ulcer. K. Blond.—p. 245.
Surgical Treatment of Gastroptosis. R. Göbell.—p. 266.
Retroperitoneal Hematoma Following Duodenal Resection. J. Koch.—p. 282.
The Pyelo-Ureterogram. L. Casper.—p. 288.
Treatment of Carcinoma of the Penis. K. Hutter.—p. 310.
Acute Necrosis of the Pancreas. P. Riess.—p. 325.
Pathogenesis and Treatment of Inguinal Hernia. A. J. Ssoson-Jaroschewitsch.—p. 352.
Bacteriology of the Gallbladder. J. Fuld.—p. 369.
Diverticula of the Bladder and Ureter. Rosenthal.—p. 404.
*Subungual Tumors. I. Carstensen.—p. 409.
Sedimentation Test in Surgical Tuberculosis in Childhood. F. Bier.—p. 432.
Cystic Adamantinoma. E. Risak.—p. 441.
Chondromatosis of the Hip Joint. F. Nilsson.—p. 458.
Formation of Collateral Circulation in the Intestine by Omentoplasty. F. Schulz.—p. 477.
Plastic Operation for Single Harelip. H. Ehrenfeld.—p. 486.

Subungual Tumors.—Carstensen reviews the literature on subungual tumors and reports one of Rodelius's cases. A woman, aged 27, had suffered for twelve years with pains in the tip of the right index finger. There was a small red point under the nail, which gradually became larger. For the last two years the slightest touch was enough to elicit extreme pain. On examination a bluish-red spot, the size of a lentil, was seen under the nail. When pressure was made on the free margin of the nail, the outline of blood vessels appeared over this spot. Subungual angioma was diagnosed. A roentgenogram, lateral exposure, showed an indentation in the bone of the terminal phalanx, corresponding to the bluish-red spot under the nail. The nail was removed. A round tumor, the size of a pea, was found and was enucleated without trouble. The periosteum of the bony cavity into which the tumor fitted was intact. Nine months later, the nail had regrown and was entirely normal. The histologic specimens are described in detail. The tumor cells were large, varied in shape and resembled epithelial cells. They were situated directly on the vascular endothelium. The growth resembled in structure three subungual tumors reported in the literature as angiosarcomas. These tumors the author regards as endothelioma or perithelioma. To the tumor in Rodelius's case she gives the designation endothelioma perivasculare. The diagnosis may be made from the localized pain alone, changes in the nail being absent. It is more difficult when, on the other hand, it must be made from the changes in the nail, without pain.

Deutsches Archiv für klinische Medizin, Leipzig

154: 257-380 (March) 1927

The Heart and Configuration of the Chest. R. Steinert.—p. 257.
*Blood Groups in Hypertension. E. Wiechmann and H. Paal.—p. 287.
*Permeability of the Peripheral Tissues for Dextrose in Epinephrine Diabetes. E. Wiechmann.—p. 296.
Secretion of Saliva. F. Delhougne.—p. 305.
Function of the Gallbladder. K. Hoesch.—p. 313.
*History of Iodine Treatment. W. H. Veil and R. Sturm.—p. 327.
Focal Reactions in Therapeutic Malaria. E. Wiechmann.—p. 358.
Insulin-Epinephrine Antagonism in Plethysmography. M. Heks and A. von Szakáll.—p. 365.
Pathogenesis of Cardiac Asthma. E. Wiechmann and J. Löer.—p. 372.

Blood Groups in Hypertension.—Wiechmann and Paal determined the blood groups in 500 patients with high blood pressure. They found a high percentage of groups B and AB. Hypertension occurs earlier in men than in women. Up to the age of 60 it is relatively more frequent in men, after that in women.

Permeability for Dextrose in Epinephrine Diabetes.—Wiechmann concludes from his simultaneous determinations of dextrose in the arterial and venous blood that epinephrine inhibits the intake of dextrose by the peripheral tissues.

Epinephrine diabetes in this respect resembles pancreatic diabetes.

History of Iodine Treatment.—Veil and Sturm publish a historical study of the use of iodine and of preparations that were employed long before the active principle was discovered.

Deutsche medizinische Wochenschrift, Berlin

53: 559-600 (April 1) 1927

Antineuralgic "Mixed Powders." S. Loewe.—p. 559.
Increased Frequency of Diabetes. H. Ullmann.—p. 561.
*Fatal Monocytic Tonsillitis. Haken.—p. 565.
Blood Grouping and Transfusion. J. Clemens.—p. 567.
Enzymes as Biologic Instruments. B. Flaschenträger.—p. 569. C'td.
Autopyotherapy. E. Makai.—p. 570.
Prevention of Blood Clotting and Electrocardiogram. J. Freud.—p. 573.
Meningitis. E. Siemerling.—p. 576.
Iron Therapy. Krichel.—p. 578.
Stereoroentgenography of the Abdomen. J. Tugendreich.—p. 580.
Echinococcus Tests. F. E. Loewy.—p. 581.
Diagnosis in Apparent Death. R. Jablonowski.—p. 582.

Fatal Monocytic Tonsillitis.—Haken reports death in three cases of monocytic tonsillitis in children. Fusiform bacilli and spirochetes were found in one, cocci in one other and diphtheria bacilli in the third.

53: 601-642 (April 8) 1927

Campaign Against Intoxicants. Raecke.—p. 601.
*Optimal Concentration in Chemotherapy. H. Kroó and Y. Mano.—p. 603.
Innervation of Muscle Fibers. O. Weiss.—p. 605.
After-Treatment in Surgery. M. Kappis.—p. 607.
Enzymes as Biological Instruments. B. Flaschenträger.—p. 611. C'cn.
Antimony in Treatment of Tabes. E. Kaufmann and H. Schaaf.—p. 612.
Extrapyramidal Diseases. E. Siemerling.—p. 614.
Malaria Treatment of Leukemia. G. Rosenow.—p. 617.
Fever at Onset of Malaria Tertiana. M. Mandelstamm.—p. 618.
Pharmacotherapy of Peptic Ulcer. F. Walinski.—p. 618.
Fibrous Tumors of the Fingers. Sonntag.—p. 619.
*Rectal Pressure as Sign of Detached Placenta. A. Calmann.—p. 620.
Treatment of Oxyuriasis. A. Dingmann.—p. 621.
Clamp for Diathermy Electrodes. M. Kaufmann.—p. 621.
Technical Novelties. M. Schütz.—p. 621. C'cn.
Progress in Roentgenology. A. Lorey and A. Wierig.—p. 623. C'cn.
Ordinance Regulating the Handling of Dangerous Drugs. Hirtsiefer.—p. 624.
"Words to Physicians and Medical Students." A. Borchard.—p. 627.

Optimal Concentration in Chemotherapy.—Kroó and Mano obtained much better results in treatment of recurrens spirochetosis of mice with diluted solutions of arsphenamine than with more concentrated solutions. The same amount of the drug administered in 1 cc. of water cured all the mice, while relapses occurred in 42.9 per cent of the animals in which 0.1 cc. of water was used. Similar results were obtained with a gold preparation, while potassium antimony tartrate acted more powerfully in concentrated solutions. They believe that the dilute solutions enhance the action in drugs which require an oxidation to become effective. The concentrated solution should be used in drugs which become less active when oxidized.

Sign of Detached Placenta.—A distressing feeling of pressure on the rectum when the placenta had entered the vagina was noted regularly by Calmann in his parturient patients.

Jahrbuch für Kinderheilkunde, Berlin

115: 253-314 (March) 1927

*Diet in Exsiccosis. E. Schiff and W. Bayer.—p. 253.
One-Sided Nutrition and Conditioned Reflexes. A. Iuschtschenko.—p. 261.
*Blood Sugar Regulation in Rickets. J. König and G. Lenart.—p. 271.
Blood Serum in Tetany. J. Csapó and J. Istváncsics.—p. 282.
Proteins and Toxicosis of Infants. E. Kramár.—p. 289.
Treatment of Bronchopneumonia of Infants. H. Temming.—p. 298.
"Eggs in the Diet in Spasmophilia." W. Wernstedt.—p. 307.

Diet in Exsiccosis.—Schiff and Bayer found that symptoms of toxicosis can be produced experimentally by administration of proteins only in acute depletion of the water reserves of the organism. They treat toxicosis by administration of Ringer's solution or whey containing 15 per cent of milk sugar. Cane sugar is probably just as good. Sometimes it is necessary to add an intravenous injection of 150 to 200 cc. of Ringer's solution containing 5 per cent of dextrose.

Blood Sugar Regulation in Rickets.—König and Lenart found a steeper alimentary glycemia curve in children with rickets than in controls. The hyperglycemia also lasted longer than in the normal children.

Medizinische Klinik, Berlin

23: 425-462 (March 25) 1927

Diagnosis of Influenza at Necropsy. R. Jaffé.—p. 425.
*Changes in Incidence and Character of Internal Diseases. Magnus-Levy.—p. 426.
Increased Frequency of Pernicious Anemia. V. Schilling.—p. 427. C'td.
Repeated Occurrence of Cancer. J. Gigl.—p. 432.
Pathogenesis of Gastric Ulcer. G. Steiner.—p. 434.
Cessation of Breathing in Tabes. C. Krüskemper.—p. 436.
Balneotherapy of Hypertension. E. Pflanz.—p. 437.
Rare Obstetric Case. W. Smital.—p. 439.
Mosquitoes and Malaria. E. Martini.—p. 439.
Treatment of Influenza. M. Besarović.—p. 442.
Instrument for Opening Gynecologic Abscesses. Dyroff.—p. 443.
Hydronephrosis Not Due to Injury. Von Schnizer.—p. 443.
Chemistry of Vitamins. E. Remy.—p. 444.

Changes in Incidence and Character of Internal Diseases.—Magnus-Levy suggested the German questionnaire on the frequency of pernicious anemia. He mentions various clinical conditions which have changed in his lifetime, either in appearance or in frequency. Cirrhosis of the liver, jaundice, gout, diabetes, dilatation of the stomach, aneurysms and general paralysis have changed. Delirium tremens has become rare, as well as the typical turbulent anesthesia of drunkards. Chlorosis is vanishing, while pernicious anemia seems to be increasing in frequency.

Monatsschrift für Kinderheilkunde, Leipzig

35: 193-288 (March) 1927

Infectious Enteritis in Infancy. O. Herz.—p. 193.
Anemias of Children at the Present Time. W. Stefko.—p. 206.
Bacteriophage Treatment in Pediatrics. W. Pockels.—p. 229.
Attacks of Cyanosis in Congenital Heart Lesions. W. Grävinghoff.—p. 237.
Vitamin Reserves in the Human Organism. G. Petényi.—p. 252.

Münchener medizinische Wochenschrift, Munich

74: 483-530 (March 25) 1927

*Alleged Malaria Remedies. O. Fischer.—p. 483.
*Grave Toxicosis of Pregnancy. H. Küstner.—p. 488.
Nonspecific Treatment. W. Weichardt.—p. 490.
Epidemiology of Typhoid. W. Rimpau.—p. 491.
*Optic Neuritis in Scarlet Fever. Haken.—p. 495.
Insurance Against Occupational Diseases. Koelsch.—p. 496.
*Dosage of Quartz Lamp Treatment of Erysipelas. J. Becker.—p. 497.
Combinations of Acetyl-Salicylic Acid with Calcium and Caffeine. C. Bachem.—p. 498.
Enhancing the Effect of Quinine by Calcium. Russmann et al.—p. 499.
Dislocation of the Wrist. F. Krapp.—p. 500.
The Irradiation Treatment Room. Hörnicke.—p. 500.
Experiments on Paratyphoid. W. Seiffert.—p. 501. C'cn.
Expert Testimony on War Invalidism. C. Zahn.—p. 504.
A Law to Combat Venereal Diseases. L. von Zumbusch.—p. 506.

Alleged Malaria Remedies.—Fischer tested a number of preparations recommended for malaria. Some were without any influence whatever, and none of them were as effective as quinine.

Grave Toxicosis of Pregnancy.—Küstner's three patients were in the fifth or sixth month of pregnancy. All had increased blood pressure. Two had fever and were in an extremely bad general condition. Abscesses of the liver seemed probable in one, paranephritis in the others. All three recovered within fourteen days after artificial abortion.

Optic Neuritis in Scarlet Fever.—Haken reports three cases of neuritis of the optic nerve in grave scarlet fever (two cases complicated by otitis) without nephritis. All three patients regained their sight in from two to three weeks.

Dosage of Quartz Lamp Treatment of Erysipelas.—Becker recommends 1.5 erythema doses of ultraviolet rays in treatment of erysipelas. The irradiated area should extend about 4 cm. beyond the erysipelatous area in all directions.

Wiener klinische Wochenschrift, Vienna

40: 445-480 (April 7) 1927

The Skin as Organ of Defense. E. Finger.—p. 445. C't'd.
Interaction of Smallpox and Hydrophobia. B. Busson.—p. 449.
*Lumbar Puncture in Outpatients. B. Dattner.—p. 450.
Acute Myelitis. A. Lang.—p. 453.
Chronic Suppurations of the Lung. E. Kirsch-Hoffer.—p. 454.

Syphilitic Condyloma in Acoustic Meatus. G. Doczy.—p. 456.
*Innervation of the Stomach in Parkinsonism. L. Hess and J. Faltitschek. —p. 457. C'cn.
Electrocoagulation in Hypertrichosis. E. Eitner.—p. 460.
Lister's Centenary. A. Eiselsberg.—p. 461.
Colloid Chemistry and Medicine. W. Pauli.—p. 465.
Abscesses and Empyemas Complicating Pneumonia. J. Donath.—p. 466.
Dangers of Metasyphilis. O. Marburg. Supplement.—pp. 1-12.

Lumbar Puncture in Outpatients.—Dattner recommends Antoni's technic (thin needle introduced in a thicker guide needle) for general use. Considerable disturbances were observed at Wagner-Jauregg's clinic in only 4 per cent of the patients. It was the same whether the puncture was made on outpatients or on patients in the hospital.

Innervation of the Stomach in Parkinsonism.—Hess and Faltitschek publish evidence for their opinion that parkinsonism affects not only the voluntary motor system, but also the vegetative nervous system.

Zeitschrift für Kinderheilkunde, Berlin

43: 193-324 (March 25) 1927

*Glycolysis and Rickets. J. Brock and A. Welcker.—p. 193.
*A New Sign in Premature Infants. L. O. Finkelstein and R. A. Wilfand. —p. 201.
Psychogenesis of Enuresis. C. Boenheim.—p. 211.
Exertion Hyperthermia in Infants. H. Rietschel et al.—p. 221.
Dynamometry and Spirometry in Children. E. Schlesinger.—p. 232.
Cardiac Murmurs in Children. L. Doxiades.—p. 245.
*Milk from Reindeer. A. Ylppö.—p. 255.
Criticism of Dick's Scarlet Fever Theory. S. Meyer.—p. 258.
Duodenal Ulcer and Disturbed Development of the Pancreas. H. Wurm. —p. 286.
Hemoglobin Resistance. N. Wundt.—p. 297.
Carbohydrate Metabolism in Cirrhosis of the Liver in Children. J. Warkany.—p. 305.
Adiposogenital Dystrophy. A. Krowitzky.—p. 315.
Central Nervous System and Vaccination. M. Gioseffi.—p. 321.
Color Perception of the Infant. B. de Rudder.—p. 323.

Glycolysis and Rickets.—Brock and Welcker found in rachitic rats the same absence of glycolysis in the blood that Freudenberg and Welcker observed in rachitic children. The blood phosphates were low. The formation of lactic acid in the liver was reduced about one half. The striated muscles from these rats had a normal content of phosphates and of hexose-phosphoric acid.

A New Sign in Premature Infants.—Finkelstein and Wilfand observed a peculiar phenomenon in prematurely born infants: When the infant lies on its side, the lower half of the body becomes bluish red, and the upper half pale. The dividing line is sharply defined and localized exactly in the middle line of the body (including the head). They believe that the phenomenon can be explained only by assuming two vasomotor centers and underdevelopment of commissural paths between them. The symptom disappears when the infant reaches the age of two to three months.

Reindeer Milk.—Ylppö found that this milk contains about six times more fat and salts than does human milk. He found 18.7 per cent of fat, 11.1 per cent of proteins and 1.2 per cent of ash in it. Consequently, children fed on it suffer from thirst and do not thrive.

Zeitschrift für Kreislaufforschung, Dresden

19: 169-200 (March) 1927

Anatomic Basis of Angina Pectoris. E. Pauli.—p. 169.

19: 201-232 (March) 1927

Blood Pressure and Climate. Siebelt.—p. 201.

Zeitschrift für klinische Medizin, Berlin

105: 301-537 (March 30) 1927

Atypical Hemolytic Anemias. K. Paschkis.—p. 301.
*Hemoglobin Resistance in Anemias. T. Wörpel.—p. 318.
*Metabolism After Blood Transfusions in Anemia. Weicksel.—p. 332.
Residual Nitrogen in Liver Insufficiency. J. S. Chasatzky.—p. 349.
Interfereometric Reading of Abderhalden's Reaction. G. Kühn.—p. 365.
*Epinephrine and Acetone. S. Hirschhorn and L. Pollak.—p. 371.
Action of the Thyroid on the Blood. F. Rothschild and M. Jacobsohn. —p. 403.
*Action of Ergotamine on the Blood. F. Rothschild and M. Jacobsohn.— p. 406.
Action of Epinephrine on the Blood. M. Jacobsohn and F. Rothschild. —p. 410.
Action of Atropine on the Blood. M. Jacobsohn and F. Rothschild.— p. 414.
*Action of Choline on the Blood. M. Jacobsohn and F. Rothschild.—p. 417.
*Chronic Diffuse Interstitial Nephritis. K. Löwenthal.—p. 420.
Diseases of the Biliary and Urinary Passages. W. Brednow.—p. 426.
Endovasculitis and Chronic Septic Endocarditis. D. O. Krylow.—p. 440.
So-Called Renal Diabetes. S. Tannhauser.—p. 448.
Carbon Dioxide Dyspnea in Cardiac Disease. P. Uhlenbruck.—p. 464.
A New Test Meal. N. J. Leporsky.—p. 470.
Disturbances of the Tonus of the Heart. R. Ohm.—p. 493.

Hemoglobin Resistance in Anemias.—Wörpel found an increased resistance of hemoglobin to sodium hydroxide in all of his forty patients with pernicious anemia. The resistance was temporarily low in only one of them. Hemoglobin from patients with secondary anemia was normal except where there had been grave acute hemorrhages; here the resistance was increased for some time. It seems that immature hemoglobin is more resistant. He used Bischoff's method: addition of 1 cc. of fourth normal sodium hydroxide to 5 cc. of a 1 per cent (by Sahli's hemometer) solution of hemoglobin and observation of the time when the oxyhemoglobin spectrum disappears. This time is about 60.5 seconds in healthy adults—a little less in women—and increases in pernicious anemia—to from 68 to 230. There is a parallelism between the gravity of the condition and the time of destruction of hemoglobin.

Metabolism After Blood Transfusions in Anemia.—Weicksel always found a negative nitrogen balance during the exacerbation of pernicious anemia.

Epinephrine and Acetone.—Hirschhorn and Pollak found an increase in acetonuria after an injection of epinephrine, in cases of spontaneous acetonuria (pregnancy, infectious diseases, asthma) or in acetonuria induced by a diet free from carbohydrates. This action may be prevented by administration of carbohydrates. The epinephrine acidosis is marked in some cases of diabetes, slight in others.

The Thyroid, the Vegetative System and the Blood.—Rothschild and Jacobsohn administered thyroid substance and observed a sympathetic effect: increase in blood cholesterol and calcium and lowering of the total phosphorus, potassium and residual nitrogen. Ergotamine has the opposite (vagal) effect in patients with exophthalmic goiter, but its action in animals is chiefly sympathetic. Choline lowers the blood sugar and the cholesterol.

Chronic Diffuse Interstitial Nephritis.—Löwenthal reports a unique case of a pure interstitial nephritis without apparent injury to the glomeruli and with only a compression of the tubules. The patient was an insufficiently treated syphilitic and died of cachexia. Gastric symptoms (achylia and vomiting) were the most prominent clinical feature. The changes in the kidneys were unexpected.

Zentralblatt für Chirurgie, Leipzig

54: 385-448 (Feb. 12) 1927

*A Gynecologic Sign of Appendicitis. H. Sellheim.—p. 386.
Operative Technic and Art. K. Mermingas.—p. 390.
*A New Indication for Phrenicotomy. E. Haim.—p. 391.
Two Rare Vessel Injuries. O. Orth.—p. 392.
Extensive Thoracic Injury Without Opening the Pleura. Schröder.— p. 394.
Ligation of the Inferior Thyroid Artery at Its Emergence from the Thyrocervical Trunk. O. Winterstein.—p. 396.
"Artificial Lighting of Operating Rooms." L. Drüner.—p. 398.
"The Simplest Method of Closing Salivary Fistulas." J. Zipper.—p. 400.

A Gynecologic Sign of Appendicitis.—Thickening, shortening and painfulness of the sacro-uterine ligaments, when it is present only, or mainly, on the right side, is a reliable sign of appendicitis, Sellheim states, if gonorrhea and puerperal infection can be ruled out.

Phrenicotomy in Traumatic Perforation of the Lung.—Haim performed phrenicotomy, as a preliminary operation to thoracotomy, rib resection and lung suture, in a case of stab injury to the lung. He believes that it furthered healing by putting the lung at rest and by raising the diaphragm and thereby rapidly emptying the pleural cavity of blood.

54: 449-512 (Feb. 19) 1927

"Palliative" Resection for Gastric Ulcer. M. Madlener.—p. 450.
Fixation of the Scalp for Brain or Ventricle Puncture. K. Eskuchen. —p. 454.

Treatment of Injuries from the Economic Standpoint. F. Steinmann.—p. 457.
*Peritoneal Suture After Appendectomy. R. Frank.—p. 460.
Metal Plate and Wire Sutures in Closure of Abdomen. S. Höyer.—p. 461.
*Convenient Approach to the Prostate. E. Haim.—p. 463.
*A Danger in Kocher's Operation for Hernia. M. Lipscher.—p. 467.

Suture of the Peritoneum After Appendectomy. — Frank applies a soft intestinal clamp to a fold of cecum containing the stump. The resistance to the needle thus obtained greatly facilitates suturing.

Extramuscular Perineal Prostatectomy. — Haim finds that, contrary to general opinion, the external anal sphincter can easily be isolated from the rectum. Passing between the sphincter and the rectum and avoiding the muscular network where the fibers of the sphincter, the bulbo cavernosus and the superficial and deep transversis perinei meet, one arrives in the space between the rectum on one side and the urethra, prostate, bladder and seminal vesicles on the other. The space contains only the soft connective tissue of the recto-vesical septum. With spatulas the sphincter is drawn forward and upward, the rectum forward and downward. The bladder, or at least the urethra, must be pressed outward with a metal catheter. Advantages of the method are, according to Haim, absence of shock, of the necessity for complicated dressings and of a visible scar; the operation can readily be done under local anesthesia and does not need to be broken off, if injury to the urethra or bladder should occur.

A Danger in Kocher's Operation for Hernia.—In operating on a small, right inguinal hernia in a boy, aged 10, Lipscher included a portion of intestinal wall in the clamp with the sac and sutured it to the lateral abdominal wall in the region of the internal inguinal ring. The error was discovered at a second operation four days later. The abdominal cavity contained 200 cc. of thick pus. The child recovered.

54: 513-576 (Feb. 26) 1927

*Danger of Explosion with Oxygen Mixtures. G. Lotheissen.—p. 514.
*"Philology in Surgery." F. Harth.—p. 518.
The Osteostat. L. A. Rosen.—p. 520.
Operation for Incarcerated Duodenojejunal Hernia with Extensive Resection of the Small Intestine. M. N. Kuschewa and N. N. Malinowsky.—p. 525.
*Crossed Renal Colic and Functional Disturbance. N. Kleiber.—p. 528.

Explosions of Anesthetic Gases.—In opening a suppurative process in the lungs otherwise than with the knife, Lotheissen uses local anesthesia exclusively, because of the danger of explosion with ether or ether and oxygen and the risk of heart failure with chloroform.

Philology in Surgery.—Harth of Athens takes exception to certain philologic strictures made by Reinberg in a recent number of the same journal. The *th* in *epithelium* is correct, for the word is not derived from ἐπιτέλλω, but from ἐπί and θηλή (*on* and *nipple*) and was first used by the Dutch anatomist Ruysch for the fine epidermis covering the nipple and tactile papillae of the margin of the lip. *Arrhythmia* is correctly written with two *r*'s because of the rule of grammar which doubles *ρ* after a short vowel (α privative) in compounds. Catarrh is another example. Reinberg thinks that *trocar* has been derived from *trois-quart* by popular etymology, whereas, Harth maintains, *trois-quarts* is the original and technically correct term, which he explains by the three right-angled triangles which together form the point.

Crossed Colic and Crossed Functional Disturbance in Nephrolithiasis.—In the case here described, the right kidney contained a calculus filling the entire pelvis, but there were no symptoms on the part of this kidney and it continued to function, whereas there had been attacks of colic in the left kidney and indigo carmin tests had shown a temporary complete cessation of function in it.

Zentralblatt für Gynäkologie, Leipzig

51: 385-448 (Feb. 12) 1927

Fingerprints in Determining Paternity. L. Nürnberger.—p. 385.
Sedimentation Speed in the Prognosis of Carcinoma of the Uterus. P. Caffier.—p. 390.
Acetarsone in Treatment of Syphilis in the New-Born. E. Klaften.—p. 400.
*Results of Radium Treatment of Carcinoma of the Female Genital Organs. I. Ikeda.—p. 407.
Method of Subtotal Hysterectomy. J. S. Passeron.—p. 412.
*Schilling's Hemogram During Labor and the Puerperium. E. Haeusermann.—p. 414.
Forceps in the Mento-Posterior Brow Presentation. F. Geppert.—p. 429.
Pyocolpos from Atresia of the Hymen. P. vom Dahl.—p. 433.
Vaccination Against Puerperal Infection. E. J. Jankelewitsch.—p. 436.

Results of Radium Treatment of Carcinoma of the Uterus.—Ikeda's statistics, which are from Japan, cover a period of twelve years. Of 432 patients treated with radium for carcinoma of the cervix, 198 are now alive. One hundred and sixteen of these have lived longer than five years, seventeen longer than ten years after the treatment. In nine of those living the tumor has recurred. He finds that most local recurrences and metatases occur during the second year. There were two cases of acute septic peritonitis caused by the irradiation. Two pregnancies (two and three months, respectively) were terminated by spontaneous abortion during the irradiation. Five women who were in the latter half of pregnancy at the time of the irradiation carried their children to term and were delivered normally. These children have all thriven and show no abnormalities. Three of these five women again became pregnant, but they died during childbirth. The children lived. The cause of death was given as hemorrhage; it is probable that scar formation in the birth passage caused difficult parturition.

Influence of Prophylactic Vaccination on the Course of the Puerperium.—Three hundred women were vaccinated against puerperal infection, 100 were given an intramuscular injection of 100 millions of streptococci and 400 millions of staphylococci twenty days before term, and a second injection ten days before term. One hundred received a single intramuscular injection of 25 millions of streptococci and 200 millions of staphylococci on admission to the clinic, i. e., during labor. In this group the results were not fully satisfactory, and the next hundred women were given further injections, one of 50 millions of streptococci and 200 millions of staphylococci forty-eight hours after the first (whether or not the birth had taken place) and one of 100 millions of streptococci and 400 millions of staphylococci after a further forty-eight hours. The results in the first and third groups were approximately the same: the puerperium was normal in 94.6 per cent, febrile in 1.8 per cent, subfebrile in 0 per cent, in 3.6 per cent the temperature rose once to 38.5 C. Three hundred unvaccinated women were used as controls. For these the corresponding figures were: 70.3, 21.9, 5, and 2.8. The high percentage of infections is explained by the bad economic condition. A general reaction, usually severe, was noted in 59.5 per cent of the women vaccinated in the course of the pregnancy, a local reaction in all. The preparation of the vaccine is described. It should not be more than two months old.

Zentralblatt für innere Medizin, Leipzig

48: 289-312 (March 12) 1927

Survey of Pharmacology. C. Bachem.—p. 289. C'td.

48: 313-344 (March 19) 1927

Survey of Pharmacology. C. Bachem.—p. 313. C'cn.

48: 361-384 (April 2) 1927

*Typhoid Carriers. P. Krause.—p. 362.

Typhoid Carriers.—Krause finds that the danger from these subjects cannot be overestimated, although care on the part of the carrier may restrict dissemination of the infection. Cholecystectomy and appendectomy should be taken into consideration.

Klinicheskaya Meditsina, Moscow

5: 1-72 (Jan.) 1927. Partial Index

Function Tests in Renal Diseases. S. S. Zimnitskiy.—p. 2.
*Mechanism of Inorganic Cardiac Murmurs. A. A. Treguboff.—p. 18.
The Cerebrospinal Fluid in General Paralysis and Other Mental Diseases. A. L. Barsuk.—p. 48.

Mechanism of Inorganic Cardiac Murmurs. — Treguboff found inorganic systolic murmurs most frequently in neurasthenic persons. The murmurs were associated with other signs of cardiac neurosis, as palpitations, pain in the cardiac region and dyspnea. Savitskiy's experiments on isolated ani-

mal hearts indicated that hyperexcitability of vagal fibers, innervating the papillary muscles, is responsible for the inorganic murmurs. The theory was verified on epinephrine and atropine tests, in patients with cardiac neurosis. Under the influence of epinephrine, the intensity of the systolic murmurs increased; under the influence of atropine, the murmurs disappeared. There was evidence that the results were independent of the blood pressure. Hypertension of the chordae tendineae, due to spastic contraction of the papillary muscles, causes insufficiency of the valves. Consequently murmur occurs. Atropine appeared to be without influence on organic systolic murmurs. In dubious cases, the atropine test may aid in the differentiation of organic from inorganic murmurs.

Russkaya Klinika, Moscow

7: 3-156 (Jan.) 1927. Partial Index

*Secretion in Intestinal Transplants. A. Vakar.—p. 19.
*Agglutination Reaction for Determination of Blood Groups. G. Alieff.—p. 55.
Compression of Spinal Cord in Tuberculous Spondylitis. M. M. Ammosoff.—p. 88.

Secretory Functioning in Isolated Segment of Ileum Used for Baldwin's Operation.—Clinical observations on the secretory functioning of the intestine were made by Vakar on a segment of the ileum used for the construction of an artificial vagina. Mechanical irritation, as from a drainage tube, or chemical irritation from irrigations stimulated the secretion of intestinal juice. The secretion was reduced by administration of belladonna; it increased greatly after ingestion of food. There was a connection between the amount of the secretion and the kind of food taken. The intestinal juice can be easily preserved at room temperature, even in an open tube. It appears that isolated segments of intestine can serve for researches on the physiology and pathology of intestinal secretion in man.

Agglutination Reaction in Determination of Blood Groups.—Alieff's method of determining the group to which a certain blood spot belongs is as follows: About 1 cc. of plasma or of serum of the first group is mixed with from 0.1 to 1 Gm. of the dry blood to be examined. The mixture is kept in the thermostat at 37 C. for from two to five minutes. If the mixture agglutinates washed or fresh erythrocytes belonging to the second group, but does not agglutinate those belonging to the third group, the blood tested is of the third group. If the mixture agglutinates erythrocytes of the third group, but does not agglutinate those of the second group, the blood in question is of the second group; if the mixture does not agglutinate erythrocytes of either the second or third groups, it means that the blood belongs to the fourth group; agglutination of the erythrocytes of both the second and third groups points to the first group. Evidently agglutinogens are not destroyed in desiccated blood. The ability to absorb agglutinins is preserved in them at least for eight weeks. The author lays stress on the value of this method in forensic medicine.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

70: 1298-1412 (March 12) 1927

Character Changes After Influenza. G. C. Bolten.—p. 1298.
Histologic Forms of the Tubercles in the Lung in Miliary Tuberculosis. H. T. Deelman.—p. 1305.
*Tar Carcinomas in Rabbits. C. Bonne.—p. 1318.
Leprosy, Probably Acquired in the Netherlands. J. J. C. Schreuder.—p. 1321.
*An Unusual Birth Obstruction. C. A. Verbeek.—p. 1323.
Etiology of Erythema Nodosum. J. C. Berntrop, Jr.—p. 1325.

Tar Carcinomas in Rabbits.—Two rabbits were each given thirteen treatments with tar on the skin of the back. In one a skin carcinoma developed, which metastasized in the lymph glands of the same side. In the other there developed an ulcerating papilloma, which was excised and on microscopic examination presented evidences of early carcinomatous degeneration. Three months later nothing abnormal was to be found in the animal. A rabbit was then treated with tar in and around the mouth, with the object of studying the effects of tar on the intestinal canal. Forty treatments were given, two a week from December to May. In June a number of papillomas and an ulcer developed in the skin of the sacral region. Biopsy showed the ulcer to be a beginning carcinoma. Seven weeks later there were metastases in the groin. In the same animal pieces of the tumor were inserted under the skin in the neck, in the inner side of one ear and in the outer side of the other ear. Pieces of one of these grafts were inserted under the skin on the inner surface of both ears in eight rabbits that had never been tarred. In one of these animals a tumor, histologically carcinoma, developed in each ear on the site of the graft—further attempts at grafting were unsuccessful. The tarred rabbit died about five months after the appearance of the first lesions. The gross and microscopic appearance of the lesions in this animal is described in detail.

Hemorrhagic Swelling of the Fetus as Birth Obstruction.—A primipara, seven months pregnant, showed signs of hydramnion. Labor set in and proceeded very slowly. Forcible extraction of the head was successful after a number of attempts, but further efforts were fruitless. The obstruction proved to be a swelling of the skin over the left half of the back, thorax and abdomen and on the left arm. The skin over these regions was so softened that the examining finger was able to pierce it, whereupon a large quantity of bloody fluid escaped, and it became possible to extract the fetus.

Acta Medica Scandinavica, Stockholm

66: 1-196 (March 22) 1927

"Sanocrysin" Treatment. N. Oekonomopoulo.—p. 1.
*Hemoglobinuria from Cold. G. Höglund.—p. 33.
Pathogenesis of Exudative Pleurisy. M. Arborelius and Y. Åkerrén.—p. 61.
*Sprue in Denmark. J. E. Holst.—p. 74.
*Diabetes Mellitus and Hypoglycemia. G. Rosendahl.—p. 100.
*Erythrocytes in Pernicious Anemia. S. Jørgensen and E. J. Warburg.—p. 109. In English.
Nomogram for Hematologic Use. E. J. Warburg.—p. 187. In English.
Extrasystolic Bigeminy. E. Zander.—p. 189.

Hemoglobinuria from Cold.—Höglund reports two cases of paroxysmal hemoglobinuria. Absorption of the cold hemolysins increased the subsequent titer of the serum in the Wassermann reaction. The cold hemolysins may be present even if the Wassermann reaction becomes negative.

Sprue in Denmark.—Holst observed a case in a woman who had never left Denmark. The patient's muscles were atrophic and she also had spastic paraplegia and spontaneous fractures of the ribs. The latter, together with the tetany, are attributed to loss of calcium through the feces in the form of calcium soaps. The blood sugar did not increase after administration of 50 Gm. of dextrose. There was some azotorrhea, but this does not exclude the diagnosis of sprue. The stomach secretion was acid, but megalocytes were increased in the blood.

Diabetes Mellitus and Hypoglycemia.—Rosendahl's patient developed hypoglycemia after being treated for a few days with Petrén's diet and small doses of insulin. The insulin was discontinued and injections of dextrose used. In spite of this, the attacks of hypoglycemia returned and the patient died. An alkalosis together with acetonuria was observed during the attacks. There was also an excess of chlorides and nitrogen (especially ammonia) in the urine. The author attributes the hypoglycemia to insufficiency of the liver.

Erythrocytes in Pernicious Anemia.—In wet preparations Jørgensen and Warburg found the mean diameter of erythrocytes from healthy subjects to be 7.7 microns. A diameter of 8.6 microns or more in more than 15 per cent of the erythrocytes is extremely suggestive of pernicious anemia. Microcytes are as a rule thicker, macrocytes thinner than normal erythrocytes. Jaundice may cause macrocytosis, although the latter is not proportional to the bilirubinemia. Microcytosis is frequent in hyperthyroidism. The percentage of macrocytes is increased not only in pernicious anemia (and sprue) but also in Jaksch's anemia, tumors of the bone marrow, some cases of leukemia, severe malaria and after various hemolytic poisons (nitrobenzene, benzine and pyrogallol), in poisoning by lead or radio-active substances, in hypothyroidism and in a few patients with cancer of the stomach.